Virginia Wildlife

DECEMBER 1981 $1.00

December 1981
Volume 42, Number 12

Virginia Wildlife

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources

Commonwealth of Virginia
John N. Dalton, Governor
Commission of Game and Inland Fisheries

Commissioners
Frank F. Everest, Jr., Alexandria
Chairman
Walter J. Leveridge, Virginia Beach
Vice-chairman
J. D. Bowie, Bristol
W. Frank Chapman, Jr., Salem
Allan A. Hoffman, Danville
James R. Knight, Jr., Warsaw
I. Lee Potter, Arlington
George L. Sheppard, Jr., Winchester
Richard T. Spain, Waverly
Frank T. Sutton, III, Richmond

Officers
Richard H. Cross, Jr., Executive Director
John P. Randolph, Deputy Assistant Director
Jack W. Raybourne, Chief, Game
Harry L. Gillam, Chief, Education
Jack M. Hoffman, Chief, Fish
Larry Hart, Chief, Lands and Engineering
John H. McLaughlin, Chief, Law Enforcement
Sam J. Putt, Chief, Administrative Services

Magazine Staff
Harry L. Gillam, Editor
Mel White, Associate Editor
Sarah R. Bartenstein, Assistant Editor
Robin Sharpe Schroeder, Art Director
Carl C. Knuth, Staff Artist and Photographer
James N. Kerrick, Staff Writer
Francis N. Satterlee, Staff Writer
Carol Condrey, Composition

Color separations by Graphic Technology, Ft. Lauderdale
Printing by the William Byrd Press, Richmond

Virginia Wildlife (ISSN 0042 6792) is published monthly by the Education Division of the Virginia Commission of Game and Inland Fisheries, Box 11104, 4010 West Broad Street, Richmond, Virginia 23230-1104. Subscription rates: one year, $5, three years, $12.50. Submission guidelines for free lance work available upon request. The Commission accepts no responsibility for unsolicited manuscripts, photographs, or artwork. Permission to reprint material from *Virginia Wildlife* is granted provided credit is given; clearance must also be obtained from the contributing writer and/or artist. Second class postage paid at Richmond, Virginia.

Observations, conclusions, and opinions expressed in *Virginia Wildlife* are those of the author and do not necessarily reflect those of the members or staff of the Commission of Game and Inland Fisheries.

Features

4 **Raccoon Stocking—More or Less** by Curtis I. Taylor
Research in southeastern states has shown that stocking raccoons is not the way to improve trapping conditions

7 **The Muskrat** by Tom Fulgham
What has webbed feet, glossy fur, swims like a fish, but is a rodent?

9 **A Cold Day's Reward** by Carl "Spike" Knuth
Two fishermen find that the Nottoway River yields fruit for their labors

13 **Trapping Basics** by Donald Shumaker
Trappers, like hunters, need to be well-versed in their sport to avoid a "slob" image

15 **Grouse Cycles: Ups and Downs** by Joe Coggin
Ruffed grouse are proving to be even more elusive to biologists studying their populations than to the sportsmen who hunt them

17 **Exploring the Winter Woods** by Bob Belton
You can "hunt" wildlife with a pair of binoculars and a camera as well as you can with a gun. And you can do it in the winter—get outdoors!

25 **Winter Visitors** by Pat Cooley
Now's the time to make provisions, if you haven't already

32 **Bird of The Month** by Carl "Spike" Knuth
The Sparrow Hawk

34 **In Nature's Garden** by Elizabeth Murray
Ironweed

35 **Index to Virginia Wildlife**
Volume 42, Numbers 1-12

Departments

3 Letters/Editorial
21 On the Waterfront
22 It Appears to Me
23 Growing Up Outdoors
24 Personalities
29 Outdoor Notebook

Cover

"A Close Call" by Edward J. Bierly, Lorton. This beautiful painting of a fox and ruffed grouse is available as a limited edition print. See page 29 for details on ordering.

Letters

FIRST CONTRIBUTOR

I read about your non-game program in the October *Virginia Wildlife*. ("Wildlife Gets a Tax Break," by Joe Coggin). I think it is a fine idea and hope that it is well supported. Maybe you could report on it next year some time in *Virginia Wildlife*.

I also read about the new spotlight law in the same issue.

What I wanted to know is this. We go out to Highland County to deer hunt. We park the trucks and set up camp and then climb up the mountain. Usually, we don't quit until sundown and have been using flashlights to get back to camp. The way I read the article in VW, we could be arrested if we keep on doing this. I'd like to know if it is allright to keep on using them. Thank you for your kind attention.

John E. Moran
Arlington

Congratulations and many thanks! You are the first person to contribute to the non-game wildlife fund!

We hope that more people like you will contribute. You have borne out our belief that hunters would be among the first to give to the non-game program.

In answer to your question concerning the new spotlighting law: this is going to be one of those issues that will often depend upon the circumstances, and which will be left to the discretion of each game warden. Certainly, unloading your gun before you begin the hike back to camp—aside from being an important safety measure—would go a long way toward convincing a game warden that you are not spotlighting. It also might not be a bad idea to get in touch with the area game warden ahead of time, tell him or her where you'll be hunting, and that you will be returning to your camp around sundown.

As you can see, the law is not always as uncomplicated as we might wish. Hope this helps.

Again, thank you.—Assistant Editor

PLEASED OUTDOORSMAN

I have just enjoyed the article "Rivers of Opportunity" in the October issue of *Virginia Wildlife*. This type of information is extremely valuable to the outdoorsman who enjoys new and different trips. I think you are providing the public with a great preview of the many exciting opportunities that await the "Virginia adventurer." In this vein, I would like to see more of this type of article in your fine magazine.

Tom Walls
New Kent

Glad you enjoyed John Heerwald's article. Mr. Heerwald is with the Commission of Outdoor Recreation, so he's in a good position to advise outdoor enthusiasts. Perhaps we can persuade him to write for us again!—Assistant Editor

Editorial

THE NEW VIRGINIA WILDLIFE

Next month's issue of *Virginia Wildlife* will be a special edition devoted to Virginia's wildlife and efforts to preserve, perpetuate and increase it being made by the Virginia Commission of Game and Inland Fisheries, the agency whose education division produces *Virginia Wildlife* magazine.

The last time that we reported to you on the activities of the Game Commission was in August 1976. So much has happened at the Commission in the past five years that we thought it was time for an update. In this issue, we've collected feature articles on the latest and most interesting developments in the wildlife field.

Going hand in hand with this issue will be a new focus, bringing with it a few changes in your magazine. *Virginia Wildlife* has been published for sixty years and has always enjoyed loyalty from it readers and great popularity with Virginians who love the outdoors. Perhaps only a fool would argue with success, but after a careful critique of recent issues, the staff decided that some "fine tuning" was in order. We've tried recently to upgrade the design and photography in the magazine. Now, we are going to work on the editorial content. The thrust and focus of the articles appearing in *Virginia Wildlife* lately have been largely determined by the cleverness and insight of our many talented writers. As good as these folks are, we decided that if anyone knew the important happenings in the field of wildlife and the outdoor sports, it should be the Game Commission. Thus we decided to take more control of the magazine's subject matter by coming up with story ideas ourselves, and making assignments and suggestions to our free lancers as well as our own staff. Many of the important stories about the state of Virginia's wildlife are not being told—and that's simply because nobody has written them. Many articles written for entertainment could also include important facts and principles. Also, the great number of departmental pages has limited the variety of articles and authors we could bring you: we've had too many "committed pages," some for topics which did not necessarily merit regular monthly coverage.

Beginning in February, we hope you will find a magazine reflecting more current events and more attuned to Virginia's wildlife, its pleasures and its problems. Rest assured, we will not abandon our delightful art features or the vivid photos of nature and Virginia's outdoors that make you feel as if you're "there." And in cases where departments have been eliminated, please don't worry that your favorite topic won't be covered: it will. With fewer departmental pages (and in some cases, *different* departmental pages), we'll have more feature pages in which to really cover the subjects that you are interested in.

In freeing up more pages, giving ourselves more room to make editorial choices, and in suggesting topics for articles rather than buying "over the transom," we will be trying to call the shots and give you more of what we think Virginians are interested in and need to know. The magazine will be different in its focus and outlook, but it will still be the *Virginia Wildlife* you've been loyal to for so long.

We think it will be an improvement. But let us know what you think. Once you've seen one or two "new" issues, tell us what you think of our efforts. After all, the magazine is produced for our readers—for you.—*H.L.G.*

Leon Kesteloo

Raccoon Stocking More or Less

Many raccoon hunters feel that the solution to all raccoon management problems is simply to stock more raccoons. However, research in southeastern states has shown that stocking of raccoons does little, if anything, to improve local raccoon populations or hunter success.

by Curtis Taylor

Editor's note: This article first appeared in Tennessee Wildlife *magazine, the official publication of the Tennessee Wildlife Resources Agency (TWRA) last year. Reference is made throughout to TWRA and to Tennessee, but we think that the content of the article is applicable to Virginia and its raccoon population. The article is especially significant since the Virginia Commission of Game and Inland Fisheries, at its August 28 meeting, moved to ban the importation of raccoons because of problems similar to those outlined in the story. In particular, the Commission had documented cases of parvovirus and rabies as a result of raccoon importation. It is reprinted with permission of the author and TWRA.*

Whenever avid raccoon hunters meet, their conversations about dogs, favorite hunting spots, or past 'coon chases soon turn into serious discussions on the management of their favorite quarry. Although heated debates may develop over the proper season length, bag limit, or other regulations, most raccoon hunters agree on one point: *we need to stock* more 'coons, and if the TWRA won't do it, then let the local 'coon hunters and hunting clubs buy raccoons and turn 'em loose! Just like the four raccoon hunters we read about in a past issue of *Tennessee Wildlife*, most 'coon chasers in the hills of east Tennessee have witnessed drastic reductions in raccoon numbers. Many hunters strongly believe that stocking is the best and only way to boost shrinking raccoon populations and save their age-old sport. After all, it's not much fun to stumble around in the woods night after night with a pack of good hounds and not tree a raccoon once in a while.

Could stocking be the answer to all raccoon management problems? Why then is the TWRA so concerned about 'coon hunters wanting to stock raccoons? Stocking seems so logical and it sure works well with fish. Does the TWRA even care about the raccoon or raccoon hunter anymore?

Before we vote to tar and feather the TWRA and rush out to start our own 'coon stocking projects, let's first examine the cold, hard facts. Many other southeastern states have experienced the same problems with raccoon populations that Tennessee now faces, and have done a considerable amount of research dealing with stocking as a solution. These studies concentrated primarily on increasing raccoon populations and hunter kill by releasing raccoons brought in from other states, mainly Georgia, Florida, and Texas. In other words, they ran raccoon stocking programs exactly like those carried out by many 'coon hunting clubs in Tennessee, except all raccoons released were tagged for future identification.

The results of all these separate studies were the same. In each case, the stocked raccoons did not improve raccoon populations nor did they raise hunter success rates. Most researchers agree that there are two major reasons why releasing raccoons fails to increase raccoon numbers: most stocked raccoons leave the desired area, and few of the remaining stocked animals survive after their release into local woodlands.

For example, of 789 raccoons stocked in South Carolina over a four-year period, only two were recovered near their release area. The other recovered raccoons moved an average of 38 miles from the release area, with some animals found as far as 100 miles away. In another research project, a raccoon released in eastern Kentucky was killed seven months later in Hamblen County, Tennessee, a distance of over 50 miles.

There are several factors which might influence stocked raccoons to disperse over such great distances after they are released. One could be a mysterious, unexplained homing instinct. But more likely, these raccoons are merely in search of habitat that is familiar to them. The wooded ridges and valleys of Tennessee certainly offer little in terms of food and cover to a raccoon transferred from a Florida coastal marsh.

Naturally, if stocked raccoons cannot locate suitable food sources, their chances of adapting to a new area are slim to none. This simple fact is supported by survival rates reported for most stocking projects. Of 1750 raccoons transplanted from south Florida to eastern Kentucky, only 13, or 0.7 percent, of the animals were recovered over a two-year period. Those raccoons which did not die soon after release were probably unable to survive cold winter weather, a climatic condition that they had never before experienced.

Wide dispersal and poor survival are not the only problems associated with stocking coastal raccoons. Perhaps the best argument against raccoon stocking programs is overlooked by most 'coon hunters, but it has generated many sleepless nights for wildlife biologists. *The possiblility of introduced raccoons transmitting disease to native raccoon populations is reason enough to abandon any stocking project.* The importation of raccoons from coastal states could actually further reduce resident populations, since such raccoons may introduce diseases and parasites into areas in which they never existed before. Our native Tennessee raccoons are able to cope with local disease conditions but would have no resistance to exotic infections imported by stocked animals. Since raccoon populations in coastal plain areas are high, they naturally offer hunters an easy source of animals for stocking projects. But these areas are also the most common focal points for canine distemper and rabies, diseases which can take on epidemic proportions in raccoon populations.

For example, in 1976, over 91 percent of all cases of rabies in raccoons reported in the United States occurred in Georgia and Florida. Introducing large numbers of raccoons carrying such a disease would be disastrous not only to local raccoons and other wildlife, but also to hunting dogs, and possibly humans, as well.

No one can be sure that the raccoons brought into Tennessee do not carry some disease or parasite unknown to our native animals. Only if the raccoons are quarantined for long periods and are individually tested can the chance of disease introduction be reduced. Even then it is not a sure bet.

By now the futility and danger of stocking raccoons from other states should be clear, and you can see why state game officials are unanimously opposed to such programs.

Much the same situation also occurs with game-farm raccoons, and considering the astronomical expense required annually to raise such animals, they do not offer a reasonable solution to the raccoon management dilemma.

Many knowledgeable 'coon hunters are aware of the problems caused by importing raccoons, but they feel that there is an alternative. They are also aware of the healthy raccoon population that presently exists in west Tennessee. Why can't these 'coons be used to stock east Tennessee? The habitat is similar and disease problems should be minimal, so why doesn't the TWRA try to transfer 'coons like they do deer and turkey? Well, they have.

As part of an intensive three-phase study, the University of Tennessee (UT) and TWRA explored the possibility of trapping raccoons in the river bottoms of west Tennessee and releasing them in the east Tennessee hills. The first two phases of the research project examined resident raccoon populations and their movement/activity patterns in the Blount-Loudon-Monroe County area. The native raccoon population in this area was found to

be almost non-existent so the third phase of the project, the translocation of west Tennessee animals, began.

Over a three-year period, 286 raccoons live-trapped in Shelby Forest and Hatchie National Wildlife Refuge were ear-tagged and released in portions of Blount and Loudon Counties. Seventeen of these animals were also equipped with radio transmitters that enabled UT biologists to locate the raccoons at any given time. Results of this translocation study which ended in November of 1978 were encouraging, but at the same time cast a dark shadow over the future of the raccoon in the rural counties of east Tennessee.

The encouraging part of the study was that the west Tennessee raccoons were able to adapt to their new environment. Raccoons recovered after an average of 432 days had gained an average of over 2.5 pounds, an increase in weight of 29 percent. Some raccoons released in 1975 were still living in the study area as late as 1978. During the first legal raccoon hunt in the study area since 1975, 32 percent of the raccoons harvested were translocated animals. Again this past year, transplanted raccoons were harvested during another experimental, four-night hunt. Hunter success for both hunts was equal to that enjoyed by raccoon hunters on the Chuck Swan Wildlife Management Area, and much better than the average hunter success in eastern counties.

By following the radio signals transmitted by the radio-collared raccoons for 21 months, we were able to determine how large an area they covered in daily routines. These "home ranges" were essentially equal to those calculated for resident raccoons recorded in the same forest tracts. In fact, all movement, activity, and denning data collected on the translocated raccoons was similar to that compiled for the resident raccoons. All in all, the west Tennessee raccoons were able to adjust their habits to fit the east Tennessee habitat and become an important part of the total raccoon population in the Blount-Loudon County area. For example, after releases, the west Tennessee raccoons moved an average of only about 2.5 miles from the actual release point. Approximately 63 percent of the female raccoons examined had produced offspring while in the study area.

But more importantly, the research project revealed some shocking and discouraging facts that are really the heart of the raccoon management problem in east Tennessee. *Of all the raccoons recovered after their release into the study area, 41 percent were killed illegally.* Keep in mind that the hunting or taking season in the study area was closed, as was the training season in the Blount County portion of the study area. The training season in Loudon County, however, remained open year-round due to a Private Act established through the Tennessee Legislature. This Act in Loudon County overruled the initial TWRA proclamation to close both taking and training seasons during the research project. The majority of the illegal kills occurred during the dog-training period, with the remainder of the kills taking place in an area of Blount County completely closed to both taking and dog training.

After only a few months' work, it was apparent that the dog training pressure in the study area was immense. Raccoons in some woodlots were confronted with packs of hounds nearly every night. After local hunters learned of the raccoon releases, the pressure became even greater. As the total number of hunters increased in the Loudon County portion of the study areas, so did the number of poachers. Under Private Acts permitting the training of raccoon dogs year-round, it is almost impossible to control the activities of poachers who can easily hunt and kill raccoons all year long. They sell the hides in the fall and winter and "shake-out" 'coons for their dogs' benefit in spring and summer. It is already difficult enough for one or two wildlife officers to patrol an entire county both day and night, but these training seasons double the effort involved in catching illegal raccoon hunters.

Even if all hunters abided by the law, many raccoons are killed during training hunts. Dogs catch raccoons on the ground, pregnant females may abort their young after long chases, and adult females may be separated from their young, which could end in death for the entire litter.

In farm woodlots and small forests tracts that comprise most of the raccoon habitat in rural east Tennessee, the constant harassment during dog training seasons can adversely affect raccoon populations. During the study, one raccoon switched its feeding habits to daylight hours in order to avoid the numerous hunting groups that took over the woodlot at night.

The long training seasons, combined with the increasing amount of hunting pressure and considerable illegal hunting, are definitely the major factors contributing to an ever decreasing raccoon population in east Tennessee. No raccoon population, native or stocked, can be expected to flourish under these conditions, especially where quality habitat is limited and continues to shrink each year.

Although the UT-TWRA research project was successful in establishing west Tennessee raccoons in east Tennessee habitat, restocking programs are justified only to establish a minimum number of breeding animals in areas where resident populations have suffered due to over-harvest. This practice cannot be expected to immediately increase the huntable population of raccoons, nor should it be used as a put-and-take program to provide hunters with a harvestable surplus of raccoons.

If hunters are genuinely concerned about the population in east Tennessee, the decreasing raccoon numbers, they should insist on management programs that: (1) provide protection of the animals during breeding and young-rearing periods; (2) manipulation of the environment to provide better habitat, and (3) adequate regulation of the hunting and dog training season to insure a harvest of only the surplus animals. Raccoon translocation becomes a management alternative only if the resident population has been depressed to such low levels that these other techniques cannot increase the population in a reasonable length of time.

If a transplanting program becomes a reality, local hunters must be willing not only to accept closure of both taking and training season for a minimum of three to five years, but also special hunting regulations after the season is reopened. Most importantly, raccoon hunters must cooperate with the TWRA and their management plans. If hunters are interested in the future of the raccoon and raccoon hunting, then they will have to let the complex management of this valuable resource be handled by professional wildlife biologists, not by Private Acts on a county-by-county basis. By working together, we can guarantee the continued existence of one of Tennessee's most prized wildlife species, and one of its most traditional sports. □

Curtis I. Taylor received a M.S. in Wildlife and Fisheries Science from the University of Tennessee in 1979. His research thesis was entitled "Movements, Activities and Survival of Translocated Raccoons in East Tennessee" He is currently a game biologist with the West Virginia Department of Natural Resources.

Living in a land blessed both with the benefits of contemporary society and with healthy populations of beaver, otter, raccoon, mink, and other fur-bearing animals, the Virginia trapper is an exceptionally fortunate individual. The most economically significant mammal of the Old Dominion fur trade, however, is neither the diligent beaver nor the crafty raccoon, but that master architect of the marshlands—the muskrat. These hardy and prolific little animals remain the very backbone of the trapping industry in Virginia and throughout North America.

Because the muskrat is both abundant and relatively ubiquitous, most outdoorsmen have spied at least once a carefree individual shiftlessly navigating a placid black-water swamp or methodically chomping a few choice cattail roots. Resembling a miniature beaver or a Brobdingnagian field mouse, the muskrat is a personable and rather unique member of the rodent clan; its closest relatives include the moles and lemmings. The muskrat's common name is attributable to the not altogether unpleasant, musk-like odor which both sexes emit during the spring breeding season. The elongated incisors and the long, scaly tail, which is not nearly as wide or as flat as the beaver's tail, are conspicuous characteristics which facilitate identification. Pelage coloration varies from a light reddish-brown to a shiny ebony. An adult averages two pounds and is about twenty-two inches in length. The muskrat is an expert swimmer, and it prefers to travel through water rather than across land, where it is especially vulnerable to attack by predators. Muskrats generally prefer to swim submerged in choppy waters, and biologists contend that an adult can withstand submergence nearly five times longer than can any of the land mammals. Laboratory subjects have endured periods of immersion which exceed 12 minutes. The tail and the webbed hind feet act as the propelling engines, but a startled or threatened individual may paddle with both the hind- and forefeet. The body is covered with a dense, silky underfur that provides warmth and repels water, but an outer layer of long, glossy guard hairs covers and protects this underfur. Although the rather small ears are nearly hidden by all of this fur, the tiny round eyes protrude conspicuously.

There are actually only two species of the muskrat in North America: *Ondatra obscurus* of Newfoundland and *Ondatra zibethicus* of mainland Canada and the United States. However, fifteen subspecies of *Ondatra zibethicus* thrive within fairly rigid population boundaries across the continent; each subspecies is distinct not only in terms of geographical range but also according to relative body size and coloration of the pelage. For instance, the muskrat of the Great Plains region is comparatively small with a pale reddish-brown fur while the 'rat of the Louisiana coastal marshes is medium-sized with dark brown fur. The common or eastern muskrat, *Ondatra zibethicus zibethicus*, is the most prevalent subspecies; this large brown 'rat inhabits those Virginia

Leonard Lee Rue

What has webbed feet, glossy fur, swims like a fish, but is a rodent?

The Muskrat

by Tom Fulgham

counties which lie west of the Blue Ridge chain. The Maryland muskrat, *Ondatra zibethicus macrodon*, occupies some of those counties to the east of that geographical boundary. Averaging two and one-half pounds with some individuals appreciably over three pounds, it is not only North America's largest muskrat but also the only subspecies with both black and brown color phases. Biologists estimate that the black color phase may constitute up to 65 percent of the total population in some coastal regions of Virginia and Maryland, but most trappers' yearly harvests contain between 20 percent and 50 percent of the more valuable black furs. One Isle of Wight County trapper sold 211 brown and 76 black pelts. Trappers from the Chickahominy region generally average 20 percent blacks in their yearly catch while the Poquoson area regularly produces yields in which the black 'rats constitute 40 percent to 50 percent of the catch. The Maryland muskrat inhabits the southeastern corner of Pennsylvania, Delaware, Maryland, eastern Virginia, and northeastern North Carolina.

A highly adaptable and flexible rodent, the muskrat frequents beaver ponds, small lakes, wooded swamps, and navigable streams, but vast populations thrive on brackish coastal marshes where they dig complex burrow systems and erect lodges from the surrounding marsh grasses and reeds. Irrigation canals, roadside ditches, and even grain storage facilities which border an adequate water supply provide suitable habitat. During periods of drought, extensive flooding, or over-population, muskrats may dig burrows in wooded areas which border grain fields or even hog lots. Large bodies of water with appreciable wave activity and extremely rapid rivers or streams do not attract large populations, but a few stalwart individuals may prefer, by choice or necessity, these environments.

The diet of the muskrat varies according to geographic conditions, but Virginia muskrats feast upon cattails, bulrushes, and duck potato. Burreed, wild rice, sago pondweeds, and small fish or frogs likewise constitute a major portion of the diet. Although it is not adapted to a carnivorous diet, the 'rat will indeed devour carrion during periods of populational or meteorological stress, and a muskrat in his second month will frequently seek, kill, and devour the newly born. In highly over-populated marshes, the stronger adults will sometimes attack and partially devour the weakest individuals. However, most muskrats thrive not upon flesh but upon aquatic or semi-aquatic vegetation.

When marshlands desiccate and the edible plant life shrivels and slowly disappears, muskrats generally abandon their established home territories and search for more suitable and more stable areas. They will often travel several miles in search of a habitable environment. In some cases, they settle in a marsh which manifests the signs of a once successful population, but abandoned lodges in an otherwise healthy marsh frequently signal the deadly presence of some epizootic bacteria. The decision to inhabit these areas is decisively fatal. High densities of predator populations, moreover, neither discourages nor dictates a muskrat's choice of habitat; the availability of food and water seems to be the determining factor. Pressure from predators will rarely induce large numbers of muskrats to vacate a marsh.

The muskrat, however, is an extremely important source of food for many animals, including man. Although they are essentially nocturnal animals, their vulnerability increases in direct proportion to the relative amount of moonlight or degree of visibility on any given night. Owls and hawks swoop upon them from the air, and raccoons, foxes, dogs, minks, and weasels roam the marshlands and forests with rumbling bellies and a keen sense for survival. Snapping turtles, pike and even water moccasins feast upon unlucky or inexperienced young swimmers. Minks are indubitably the most successful muskrat hunters, but a healthy, adult 'rat is by no means utterly defenseless against attack; a pair of sharp, skillfully brandished incisors can greatly disappoint an inquisitive mink with a mad craving for a furry little midnight snack.

Muskrats are primarily unsocial individualists; that is, they prefer to execute their daily routine without the advice or aid of another muskrat. Although it may appear that lodge building and attacks on predators are clearly coordinated communal efforts, such "team" activity is executed solely through individual motivation. A muskrat will attack and sometimes kill transient wanderers who violate territorial boundaries, especially during the breeding season. Lodge building and maintenance occur mainly during the winter months but extend into spring and early summer when breeding activity peaks. Most litters are born somewhere between March and September, but the greatest concentration occurs in May and June. A female may have from one to five litters during each breeding season; most females have three litters per season. Both the common and the Maryland subspecies in Virginia average four young per litter; therefore, one female may produce as many as twenty offspring in one season, but most produce between eight and twelve per season.

Muskrat trapping in Virginia can be a highly profitable venture. Most trappers skin their catch, sell the meat privately, and then sell the pelts to a fur buyer. Incidentally, muskrat meat, known commercially as "marsh rabbit," is quite flavorful. Furriers pluck the long guard hairs from the pelt and dye it to resemble some other type of fur. Most brown pelts are made into "Hudson Seal," a fur which closely resembles the natural pelage of the fur seal. The pelts of the black Maryland 'rats are used to make natural muskrat coats.

The muskrat, then, is both economically and environmentally significant in Virginia. They may at times cause considerable damage to dams, dikes, and ditches with their burrowing activity, and during periods of drought, flooding, freezing weather, or population stress, they may irrevocably damage fields of corn and other grains. Perhaps the muskrat is its own greatest enemy; overpopulation encourages intraspecific strife, increased pressure from predators, and disease, nature's most effective tool for balancing population density with the availability of a sufficient food supply. Once man has forced himself upon the cyclic rhythm of life and death in a marsh, it is his obligation to ensure that the wildlife of that marsh remains abundant and healthy. Once a muskrat population adjusts to trapping pressure in its environment, that area must be trapped yearly; otherwise, it will overpopulate, and disease or the scarcity of food will force those muskrats which survive to leave that area. A new population will establish itself in a few years, but the quick death of an animal by a modern, efficient trap is far more humane and far less gruesome than a slow death by disease or starvation. The muskrat is one vital part of nature's delicate balance of survival; it devours living things and is, in turn, devoured by other living things, but it continues to adapt and to endure. The duration and success of the trapping industry manifest man's crucial ability to utilize conservatively and efficiently his surrounding natural resources without foolishly and impetuously decimating them. □

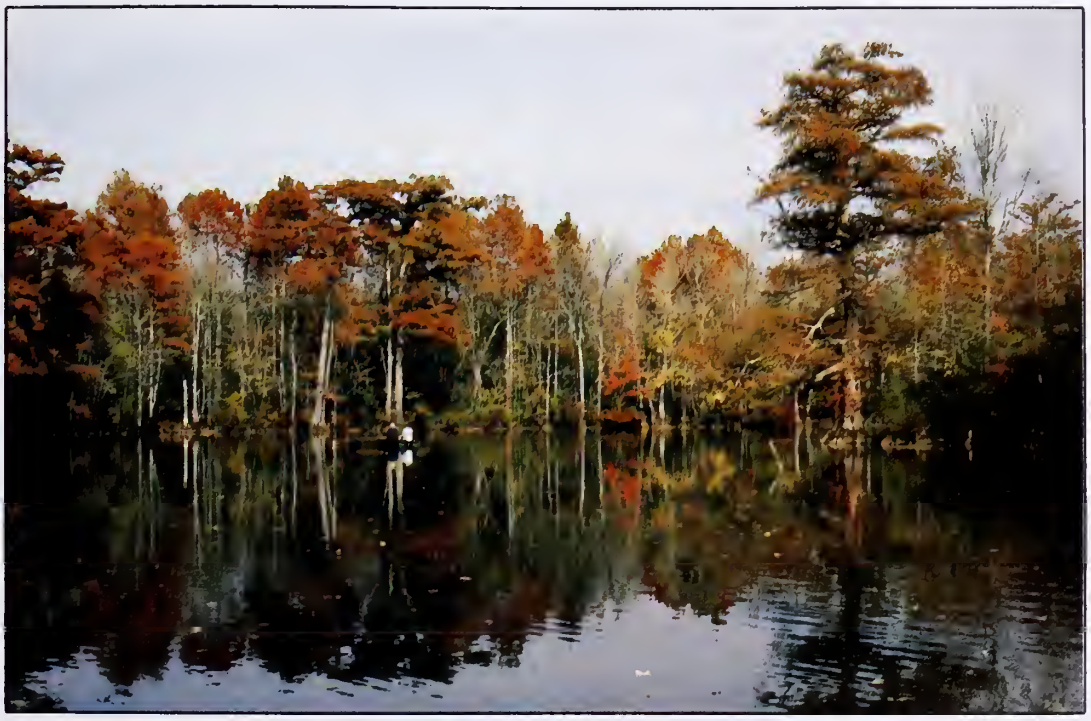
It was raining lightly when I left Mechanicsville at 5:30 am. My good friend and fishing buddy, Bob Clontz, had called from his Smithfield home the night before. Our original plans were in danger of being washed out, so Bob thought it would be best for me to come a day early to beat the weather. Rain, followed by a cold snap was forecasted, "and besides," Bob said, "the fish usually hit pretty good just before a front."

After meeting Bob at his home we organized all our gear into Bob's van and headed toward Virginia's Southampton County and the Nottoway River. Fingers of light began to illuminate the landscape as we drove through the waking town of Franklin. Bob launches at a private, rutted, sandy ramp located on one of the many backwater sloughs of the Nottoway. Water levels were still very low due to a severe summer drought. A brownish-orange mat of leaves glutted the launch area. With gear in place in the johnboat, we shoved off into the dark, clear waters and began motoring out into the main river channel.

The heavily wood shores were a stark contrast to the same location in early November. Then the shore was vibrant with color reflected in quiet, almost currentless, water. Now, only splashes of red and yellow are visible with a dash of wintergreen from holly, pine, and cedar.

The Nottoway originates in Lunenberg County and meanders southeasterly some 135 miles to its confluence with the Blackwater River, forming the borders of Dinwiddie, Brunswick, Greensville and parts of Lunenberg, Nottoway and Sussex counties. It curls back south-southeast, cutting Southampton County in half before crossing into North Carolina where it is joined by the Blackwater and Meherrin Rivers. These three ultimately form the Chowan River which flows into Albermarle Sound. Draining an area of 1700 square miles in the center of the Chowan Basin, the Nottoway is a clear, fast-flowing river. Its shoreline consists of a variety of open areas, woodlands and swamps and is relatively undeveloped. Timber snags and shallow areas hinder navigation to some extent in certain places.

The Chowan Basin, and especially the Nottoway River, is unique in that it has smallmouth, rock bass and the Roanoke River rock bass, a rare species that presently has a "special concern" status in Virginia. It also contains walleyes and apparently has in the past either naturally or from very early stocking efforts. While populations are not high, the fish division of the Commission of Game and Inland Fisheries has been conducting some



A Cold Day's Reward

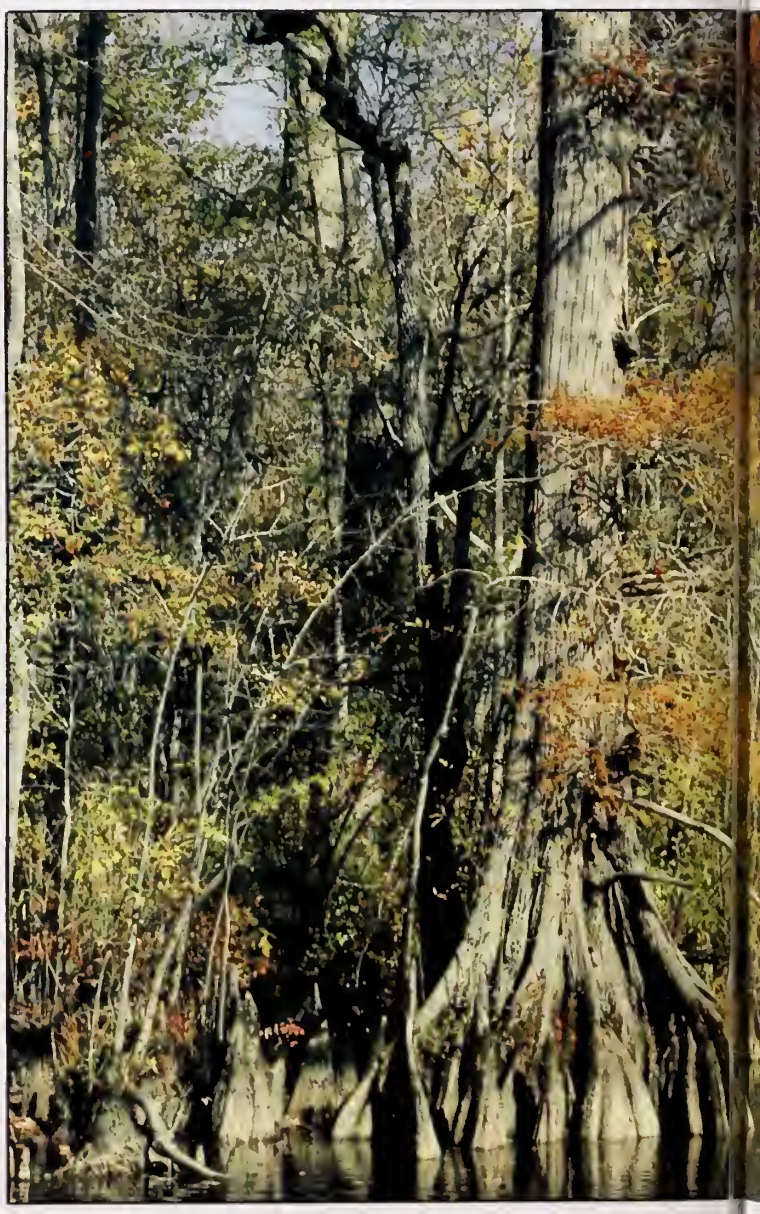
by Carl "Spike" Knuth

stocking in the Dinwiddie-Brunswick county area. The Nottoway also supports good populations of pickerel, largemouth, crappie, catfish, yellow perch, and bluegills as well as hosting spring runs of herring, shad and striped bass.

Tupelo gum, cypress, alder, birch, maple, and sycamore predominate the shoreline, with smatterings of poplar, pine, holly and greenbriar. The huge cypress trunks and knees were especially fascinating. Many of the big trees were knarled and twisted—veterans of many spring floods, summer thunderstorms and piercing winter winds. A great blue heron flew lazily ahead of us. As we sped upriver I lost myself in the reflection of the sky and shoreline on the water. Looking deep into the reflection has almost an hypnotic effect as if there were a danger of falling up into the sky!

I was shaken out of my daydream as the boat came to a sudden stop. The wind was up now, foretelling of the coming rain and cold front. "Should be ideal," Bob said, implying that some fish will go on a feeding spree just before the front. I recognized the same old tree along the shore that we had fished near earlier in the year. Bob had a certain stretch of water that he fished regularly and which produced smallmouth bass just as regularly.

Our fishing strategy was rather simple. We would be using jigs—yellow, leadhead, bucktailed jigs or black Gapen hairy worms—and floating, but deep-running crank baits. In some areas of the Nottoway, the bank drops almost straight down to 25 or 30 feet. Many trees fall into the river each year as the banks give way around their root systems. Some fall into shallow water, others into the 30-foot depths, providing superb cover for smallmouths, largemouths, pickerel, and crappie. Bob made a cast with his yellow jig to a spot just off the shore and allowed it to sink. As the lure sank, the 12-pound mono left a tiny wake moving toward the boat. Bob relies heavily on being able to watch his line on the surface. When it stops, he explained, the lure had hit bottom. A raising of the rod tip, in a twitch or mild jerk, raises the bait up and it drops again with the lowering of the rod. Through experience, Bob can almost immediately gauge the depth by watching the line sink off of the surface. Another twitch or mild jerk upward and the jig is jumped up, then allowed to sink again. This time more line sinks below the waterline, indicating a drop in depth. In some areas, it would drop from two feet to 30—almost straight down! If the line would suddenly stop before going full depth, there's a good chance it's been intercepted—



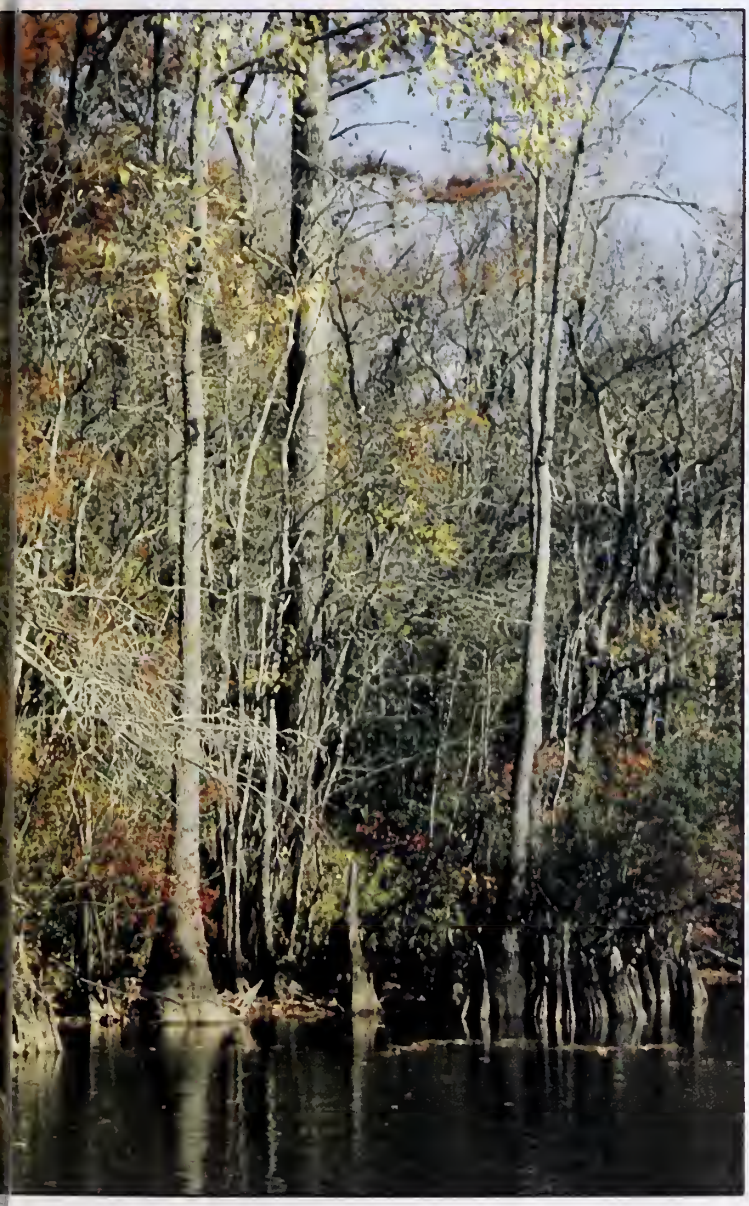
probably by a bass.

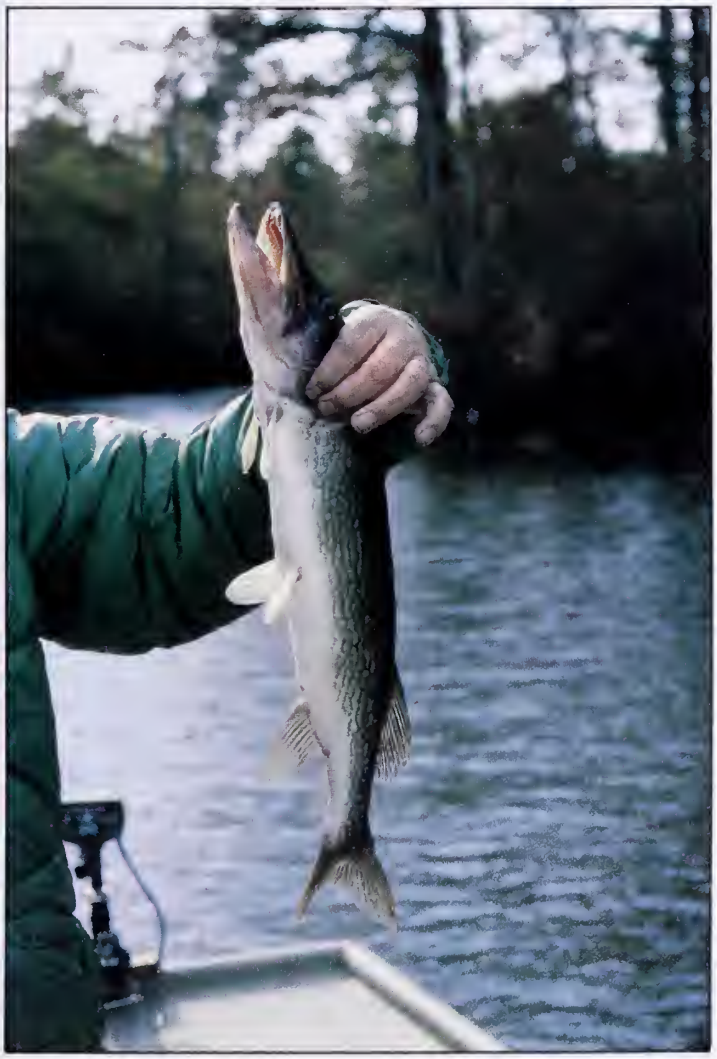
We'd have to set the hook quickly, using wrist action in an upward motion. There will always be a certain amount of slack, plus stretch in the line that must be overcome for a direct pull on the lure to set the hook. Sometimes the line may give a slight twitch or sideways motion which also indicates fish. Generally, the fish takes the jig on the drop and in many cases is not noted until you begin to lift the rod tip up again. If you feel any resistance, set the hook. Frequently the hooks are jammed home into a sunken log or tree top, but if you don't spend some time pulling out of the snags, chances are you are not working your lure where the fish are.

Within our first ten casts, each of us got hung up twice. As usual, I was up in the trees, having neatly wrapped my little bomber crank bait around a bare tree branch. I switched back to a black hairy worm and immediately got a small largemouth which I returned to the water. Moments later, off the end of a sunken tree top, I got a good hit. After a brief tussle, Bob netted my one-pound smallmouth—small in size, but big in satisfaction.

At the time, Bob was more elated than I was. He had really come to love these bronze battlers. Bob has taken six-pounders out of the Nottoway's deep holes and he now began fishing with intensity. Suddenly, he jerked his rod skyward and after a spirited fight, a pound and a half smallmouth came aboard. Now Bob was really on fire. Quickly he dropped anchor. "We'll work over this area real good," he explained, "because as the water cools, smallmouths gather in groups or pockets." Shortly afterward, Bob moaned as he lost one. He was sure he had just missed hooking that citation he was after, having caught at least one citation smallmouth each season for six years. "That was a good fish," he groaned. I wasn't going to dispute his judgement. Bob got another one-pounder before I got hung up on a big underwater branch. It all came up to the surface, disturbing the bottom severely enough that we decided to move and go after largemouth and pickerel for awhile.

We worked various deep holes upstream, turned around and worked others back down. We had numerous misses on the black hairy worms. Cold water fish don't always hit with the same gusto of spring and summer. Often, we had no indication of a strike, not knowing until the rod tip was being raised that we had fish on. If our reaction was quick, we hooked the fish, but sometimes they were tipped off beforehand as the line tightened up.





Bob hooked a small pickerel before we decided to move down river.

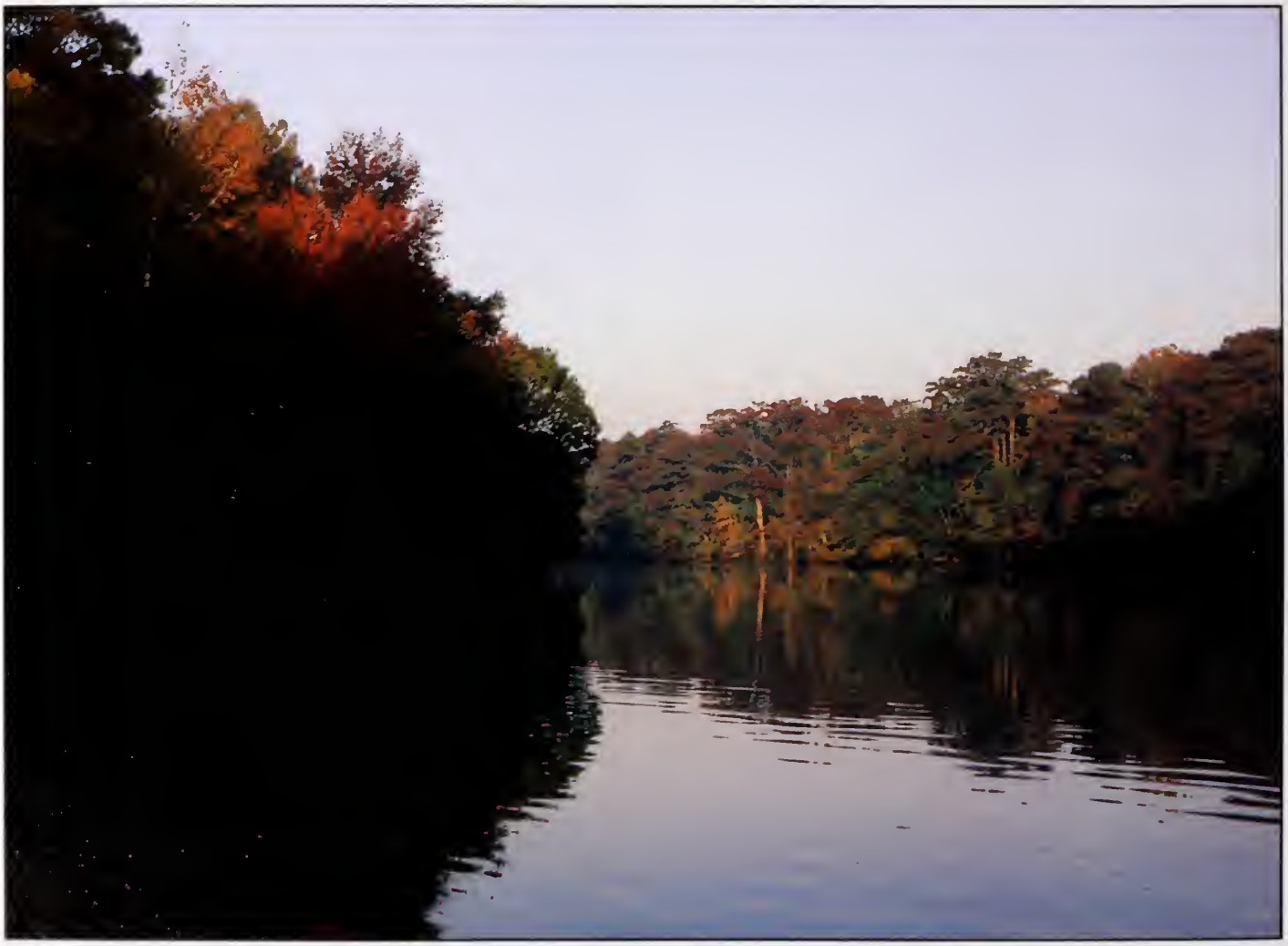
Winds were gusting to 20 mph and it became increasingly difficult to properly work the hairy worms. Most of the time we couldn't see the line to "read" what the line was doing, or the wind was blowing bows in our line. We switched off from hairy worms to crank baits and back again, with Bob using his yellow leadhead bucktail jig at times. While fishing up against some cypress knees, Bob hooked another small pickerel to add to the ice chest. Pickerel, upon hitting and missing, will frequently continue to follow the lure right to the boat. Minutes later, Bob set the hook into another fish which literally exploded on the surface. "Grindle," yelled Bob. "They like these hariy worms too." It was the best fight of the day. A six-pounder—common in these southern waters—his grindle (bowfin or dogfish) apparently was laying down deep on the bottom which is typical of grindle in winter. Woe be to the bait that comes within its reach!

Further downstream, we began working around another sunken treetop. Suddenly, he was into another fish, this time a nice, three-pound largemouth. Here, I lost my best fish of the day as it threw the hairy worm back in my face. It had caught me by surprise and by the time I realized I had a fish on, I failed to set the hook properly. A jump, a shake of the head, and an easy four-pounder was gone.

But the best was yet to come. Immediately afterwards, Bob hooked a real horse. Actually, I thought it was going to swallow the boat! After a surprisingly easy fight, Bob netted a 24-inch, seven-pound, three-ounce largemouth. This was apparently an old female near the end of her life span, for in her prime she would have gone at least 10 pounds.

It was getting on towards three o'clock and Bob suggested we try once more on the smallmouth. We went and anchored off the same treetops and it didn't take long for Bob to string another pound-and-a-half smallmouth. Try as he might, the citation evaded him, although at one point he had another bigger fish on. I decided to work the black hairy worm again. I got a good strike but missed. A quick cast in the same spot produced another strike and miss. Continuing to work the jig, I got a good solid hit and closed the day with a two-pound chain pickerel.

It was getting overcast now and the wind was becoming steadily stronger. However, with our mixed bag of smallmouth, largemouth and pickerel, we were quite satisfied with our day on the Nottoway. □



Trapping Basics

As trapping grows in popularity across the state, it's essential that beginners know their quarry and know the rules of the game.

by Donald D. Shumaker

Leonard Lee Rue

Mel White

Fur prices in recent years have reached an all-time high, creating renewed interest in an age-old occupation, fur trapping. Many newcomers have entered the sport of trapping in Virginia and some of the older, Depression-era trappers are wading the Old Dominion's icy, winter waters.

Trapping in Virginia is not new; there have been trappers here since colonial days. The early fur trappers in this state and across the nation were largely responsible for the settling and development of America. Their searchings and wanderings for beaver pelts and other furs paved the way for the settlers and farmers.

While trapping has gained popularity in recent years and trappers' ranks have grown, the sport has also been under attack by many who fail to realize a major factor in wildlife conservation: annual surpluses of furbearing animals do exist in Virginia, and regulated trapping provides for harvesting of this renewable natural resource. As wildlife biologists and game officials know, surplus animals cannot be "saved," but are harvested and utilized or they are wasted. Wasting wildlife benefits no one.

Virginians are fortunate in having a wide variety of furbearing animals, most of which can be found in abundant numbers. Furbearers found in Virginia are beaver, otter, mink, muskrat, nutria, raccoon, opossum, skunk, bobcat, weasel, and red and gray fox. In a given area, when a population level exceeds available habitat, a species can become a nuisance to farmers and landowners.

Wildlife management practices used by the Virginia Game Commission are largely responsible for the increase in numbers of Virginia furbearers in the past two decades. Animals such as beaver and otter that were near extinction in Virginia during the 1950's are now more abundant than ever.

Some misinformed Virginians fear that the renewed pressure of trapping may pose a threat to some species of furbearers due to overharvesting. Supervising game biologist Harold Trumbo says, "Loss of habitat and urbanization are some of the more predominate threats to Virginia's furbearing population. The [Game] Commission presently has seven studies underway that pertain to furbearers, and more are being considered. We utilize this information when seasons or limits are to be determined for the various counties in the Commonwealth."

Renewed interest in trapping in Virginia is not without its problems. The influx of inexperienced and "slob" trappers has crippled the image of the efficient and law-abiding trapper in some areas. As in any popular outdoor sport, trappers have among them that small percentage of participants who have not learned proper trapping techniques, and who believe that they are exempt from Virginia game laws. One slob can ruin or tarnish the image of thousands of skilled, competent outdoorsmen.

Having more trappers in the field has also increased the workload for Virginia's game wardens. What are their reactions to the increase in trapping? Virginia game warden Rex Hill of Chesterfield County says, "We welcome good trappers [because] they assist in controlling the animal population and aid the wardens in nuisance animal removal." Trapping is one of the most efficient methods of removing problem animals such as beaver that flood roadways or muskrats that dig burrows in farm pond dams.

The Virginia Trappers Association was formed in 1966. Its goal is to "unite trappers in order to

Leonard Lee Rue

Leonard Lee Rue

have an effective voice in game legislature, to police our own ranks, and most important of all, to educate the younger trapper in proper techniques and trapping ethics," according to Joe Brescia, president of the Association. The V.T.A. has a current membership of approximately 900 members.

In cooperation with the Game Commission, the V.T.A. held its first "Trapper's Educational Clinic" last October. Experienced trappers taught the basics of trapping and fur handling while emphasizing outdoor ethics. A Virginia game biologist and a game warden also lectured in their respective fields. The clinic was a success and the two organizations plan to continue such events.

For Virginians who would like to experience this fascinating hobby, there is much to learn before going out and setting traps. Trapping laws are listed in the same folder that contains Virginia's hunting laws ["Game Law Digest"]. Distributed by the Game Commission, the folder is available wherever hunting and fishing licenses are sold, including most sporting goods stores. It is important for trappers to know the law and obey it. If there is any doubt in your mind concerning the law, call your local warden; he or she will be happy to answer your questions.

Let's assume that you've bought your trapping license, have a few traps with your name on them and have gone so far as to obtain landowner permission to trap. Do you think you're all set? You aren't. You probably wouldn't recognize a mink track if you saw one, even if you knew where to look. Do you know what a fox dropping looks like, or what a muskrat eats? To be a successful trapper, you must know your quarry thoroughly, what it eats, where it sleeps or dens, what its tracks or "sign" look like and where to look for it. Knowledge of the animal or animals to be trapped has much to do with your success as a trapper.

You can learn a great deal about furbearers and methods of trapping by accompanying an experienced trapper on his or her trapline. A competent trapper can teach you in a few days what could take the average person years of mistakes, frustration and unanswered questions to learn.

Trapping, as other outdoor sports, requires the outlay of some cash to begin. The necessary equipment includes traps, name tags, pack or packbasket, digging trowel, hatchet or axe, wire, pliers, fur-stretching forms and a good skinning knife. Beyond these basic items, the type of trapping that you engage in dictates what, if any, additional and specialized equipment you will need. The fox trapper will need a small dirt sifter, rubber gloves and various scents and baits. The water trapper will need hip waders and possibly a small boat or canoe. Again, an experienced trapper can advise you on what is needed and where it may be obtained.

Fur handling and pelt preparation are other phases of the total trapping experience that require certain basic knowledge and skills. Fur buyers and other trappers can help you. Some animals are skinned and stretched differently than others. There are also many excellent books on trapping and fur handling available through mail order supply houses. Your local library is another good source of information.

If you that want more information conerning the Virginia Trappers' Association and future educational clinics, you may contact Mike Tanner, 2940 Kingsland Road, Richmond, Virginia 23234, or Joe Brescia, 2132 Shipyard Road, Chesapeake, Virginia 23323, 804/487-1766.

The trapline has afforded me with many pleasurable experiences and memories that will last a lifetime: bitter cold mornings with wet hip boots and frostbitten hands are somehow overshadowed by beautiful Virginia sunrises and misty streams. The quacking of startled wood ducks or the slap of a beaver tail on a pleasant day afield causes a person to be thankful to be alive, to be able to enjoy the outdoors and Virginia trapping. □

Grouse Cycles: Ups and Downs

Leonard Lee Rue

Despite their wide distribution throughout North America, ruffed grouse still have biologists wondering at the fluctuations in their numbers.

by Joe Coggin

Ruffed grouse are the most widely distributed resident game birds on the North American continent. They may be found in 38 states and 13 Canadian provinces from Alaska to Georgia. According to a recent survey, ruffed grouse were considered to be an important small game resource in 20 of these states and provinces. Besides the untold hours spent by hunters in pursuit of this elusive game bird, briefer moments are enjoyed by outdoorspersons following an unexpected flush or the regal display of a strutting male grouse.

Despite its importance and popularity as a wildlife resource, many questions about grouse ecology remain unanswered. The phenomenon of cycles or fluctuations in grouse numbers has intrigued wildlife biologists for years. Factors including predation, weather, diseases, parasites, and sunspots have been presented as causes of these ups and downs in grouse numbers; however, biologists studying grouse have failed to reach concensus on the mechanism behind these fluctuations. Here in Virginia, fluctuations in grouse numbers have been documentated by biologists with the Commission of Game and Inland Fisheries by means of flushing surveys and age determinations reported by dedicated sportsmen. Each year, cooperating grouse hunters submit to the Game Commission wings and tails collected from grouse they have harvested. The ages of the birds are then determined by feather characteristics. These hunters also provide a record of the number of birds they flush during the season which is expressed as flushes per hour.

Age ratios in concert with flushing counts serve as indicators of the year-to-year fluctuations in grouse numbers. According to these flushing rates, a decline in grouse numbers was detected each year from 1973-74 through 1976-77 (see Table 1). However, grouse have been increasing in numbers each year since the 1976-77 low.

Interpreting the age ratio data is a bit more complicated. Ordinarily, a larger percentage of juveniles in the harvest is an indication of an expanding population and vice versa. The age ratio and flushes-per-hour abundance indicators are in agreement with each other except in the 1975-76 season. In this season, flushing rates indicated a lower abundance while a higher-than-average percentage of immature birds was found in the harvest. Unfortunately, any conclusions we draw about age classes in these cases are very tenuous. Larger wing and tail samples and more flushing reports will allow greater confidence in the age ratio and flushing report techniques biologists use to monitor grouse fluctuations.

In addressing the phenomenon of ups and downs in

Leonard Lee Rue

Table 1. Grouse Flushes Per Hour and Rearing Success

Season	Percent Juveniles in Harvest	Flushes per Hour
1973-74	45.8	1.31
1974-75	26.0	1.00
1975-76	38.3	.98
1976-77	20.0	.72
1977-78	23.0	.90
1978-79	34.3	1.21
1979-80	32.6	1.24

grouse numbers, Game Commission biologists in cooperation with wildlife researchers at Virginia Tech have initiated a research program to identify the role that nutrition plays in grouse fluctuations. This approach is very fundamental, for nutrition plays a vital role in the mechanisms altering natality (birth rates) and mortality (death rates). Initial results have shown that food quality may be a problem to ruffed grouse in the critical period of the year between winter and spring. Virginia grouse typically diet on hard (acorns) and soft (greenbrier and grape) mast in the fall season. On this nutritious diet, birds gain weight rapidly and lay down fat reserves. With the onset of winter and decrease in hard mast availability, grouse will rely more heavily on soft fruits and leaves of non-woody trees (honeysuckle, Christmas fern, etc.). In the spring the principal foods taken are leaves of non-woody plants.

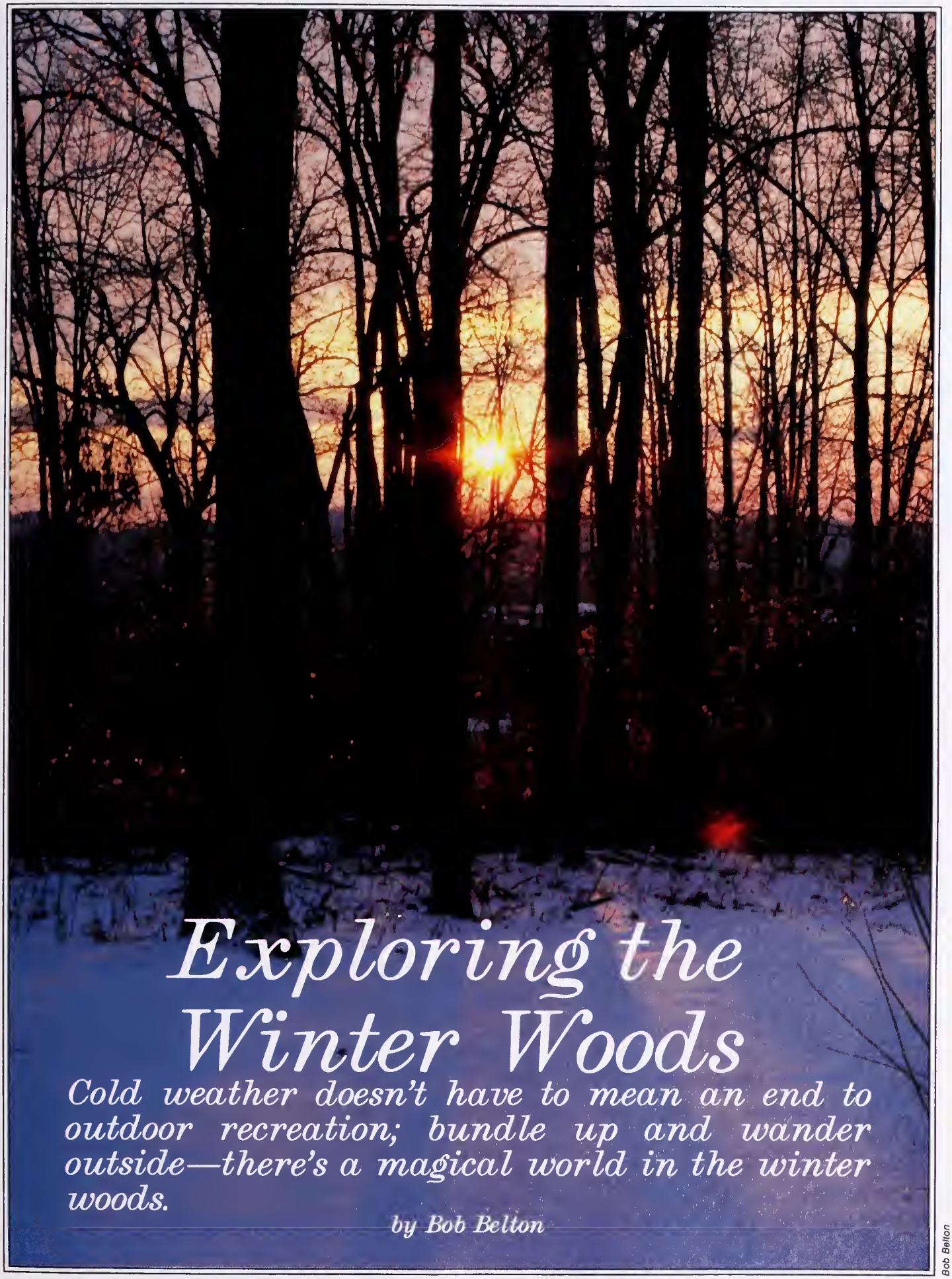
With diet shifts between seasons, progressive declines in nutritional quality of the diet may be found. Despite these declines, it appears that grouse are able to meet their energy requirements for a good part of the winter. The critical period for grouse comes between winter and spring as they shift to the non-woody leafy material alone. Evidence indicates that grouse maintenance requirements exceed that of its diet during this period as body weights decline (28 percent) and body fat levels drop sharply (from 16 to 15 percent). Energy needs for thermoregulation and reproduction contribute to this energy deficit.

Initial steps toward understanding grouse fluctuations in Virginia have provided baseline information for managers and researchers to build on. The late winter-spring period has been identified as a nutritionally stressful period for grouse in Virginia. Fall and early winter foods were found to be important as these nutritious foods provide excess energy that it channeled into body fat reserves that may be used in more critical periods.

But there are many questions still to be answered and further research is needed. In the meantime, if you wish to become a cooperating grouse hunter please send your name and mailing address to:

Joe L. Coggin
Route 1, Box 239
Eagle Rock, Virginia 24085

Hunters who assist with wing and tail collections will receive survey reports each year. These efforts will greatly assist Game Commission biologists in monitoring Virginia's ruffed grouse population. □



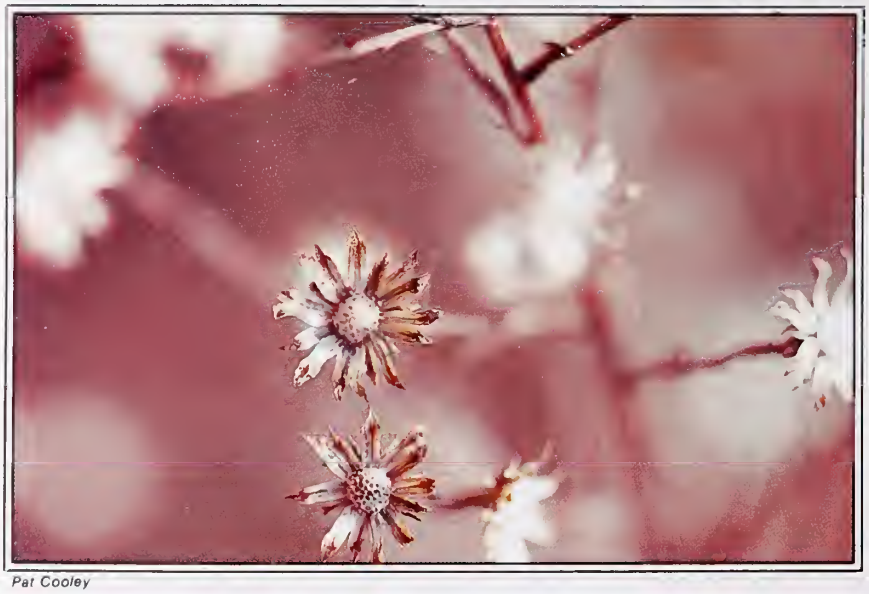
Exploring the Winter Woods

Cold weather doesn't have to mean an end to outdoor recreation; bundle up and wander outside—there's a magical world in the winter woods.

by Bob Belton

Bob Belton

Harry Gillam



Pat Cooley

Pat Cooley

I get "antsy" in the wintertime—for some exercise and a little adventure. No doubt, providing firewood for the stove involves exercise, and plenty of it, and so do the myriad other chores around my house and yours.

But there's a special craving I experience that "domestic" chores can't satisfy—I want to get out into the woods and see what I can see.

I usually begin to get this urge around February or March, when fishing is slow and hunting season is closed. You may get it earlier, especially if you are not a hunter or fisherman.

Fortunately, that's easy in our rural, western Albemarle County setting—I just walk out the front door, yell for Charley, my Brittany spaniel, and head off over the hill. Often, my wife, Mary Frances, comes along, and we stomp into the woods "armed" with binoculars and camera. And we have a ball.

The last time we ventured out, we'd not gone thirty yards before we spotted a strange, brownish plant poking through the leaves. It proved to be the die-hard remnants of Indian pipe, a plant which manufactures no chlorophyl and lives off surrounding vegetation. In better times it is a pearly white, yellow or blue in varying shades and combinations.

Animals seldom make personal appearances during our hikes but, especially when there's snow

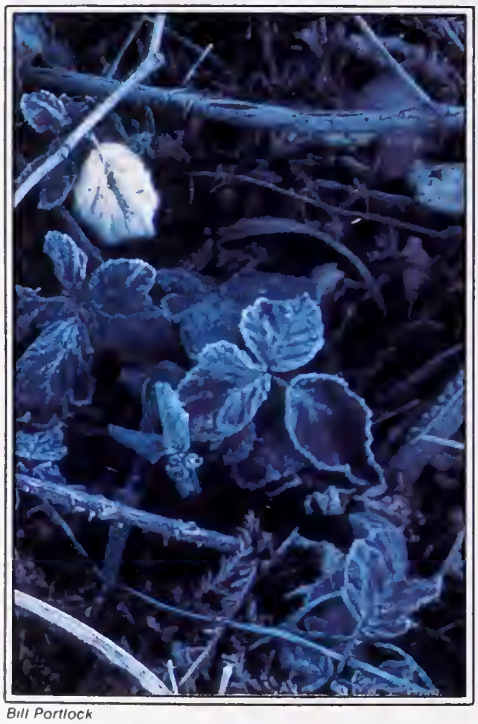
Pat Cooley

on the ground, a veritable school in animal track identification is sponsored by our local deer, rabbits, squirrels and foxes. And hungry turkeys scratching through the forest litter leave unmistakable signatures of their foraging.

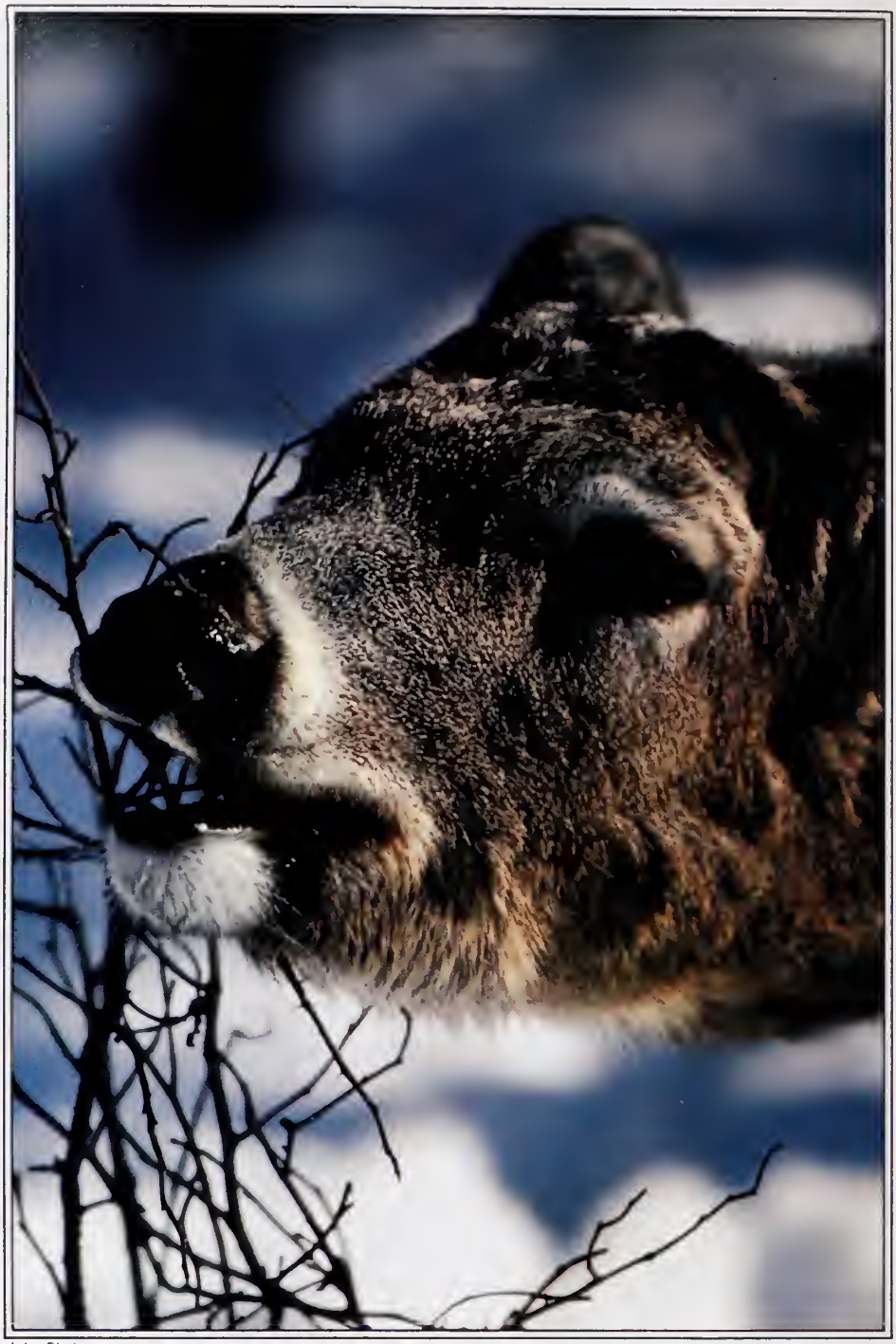
But I must admit I'm never disappointed even if we see no wildlife signs (though there are always new buck rubs to be discovered on small saplings throughout the area). The reason for this is the endless variety of the winter woods: new springs to discover, streambeds to follow, rock formations, ferns, mosses and lichens in varied colors and textures, birds and trees and shrubs to identify and even just gazing at an azure sky through the bare branches of a venerable oak or poplar. And the pleasure of hearing and feeling "the sweep of easy wind and downy flake" often is an important ingredient in our winter walks, as are sparkling, golden yellow sunrises or sunsets over the now-covered landscape.

Weather plays a surprisingly vital role in the ambiance, the "feel" of winter woods. Of course, our occasional snows evoke stirrings of mystery, even reverence, as their attendant hushes descend over the hills and hollows. And foggy weather gives the forest an even more mysterious, often eerie feeling which makes us, on our return home, doubly appreciate a cup of hot coffee and the warmth of the wood stove.

You can "hunt" the winter woods with a camera or binoculars and see flowers, blackberry leaves, and forests in their cold weather dress; you can see where animals have been; and, if you're fortunate, you may see the animals themselves; perhaps a deer browsing, or a squirrel who comes to eat the goodies you meant to leave to the birds!



Bill Portlock



John Ebeling

Our woods are most interesting to me after a rainy spell. Textures and colors often are more pronounced, I can move quietly through the leaves and thus increase my chances of spotting a fleeing deer or a scrambling squirrel, and there's an indefinable sense of renewal, of storing up the rainwater for more active or drier times.

The silvery chestnut tree remnants in our winter woods, prominent without camouflaging leaf cover from nearby live trees, seem to beckon, "Take a closer look." We do, and are rewarded with rhapsodies of design and texture, haphazardly tossed into marvelous symmetry by nature in a mossy, broken limb. A small stump, long ago shorn if its trunk, gathers a crown of delicate gray-green lichens and serves regally as a banquet table for an acorn-eating squirrel.

On a recent walk we discovered an abandoned logging road we didn't know existed, marvelled at the curious fan-like shapes on a small chestnut stump and were puzzled by a low green plant growing in abundant patches on the cold northwest crest of our hill. Our pal Mo Stevens assigned its probable identification as mustard garlic.

That's not bad for just wandering out the front door and taking a walk. Try it, even if you have to go to a little more trouble to find some winter woods in which to roam. The results will be worth the effort. □

On the Waterfront

Edited by James N. Kerrick

Winterizing Your Boat, Motor, and Trailer

If you haven't already done so now is the time for skippers to check to insure that equipment is ready for the off season. If you are storing your rig at home here are a few reminders that could save you money and embarrassment.

1. Remove the drain plug so water will not remain in the bottom of the boat.

2. Block up the tongue of your trailer so the bow is higher than the stern.

3. If you cover your boat with a tarp, be sure there is a free flow of air throughout the boat.

4. Remove all anchor lines and personal flotation devices from the boat and store them in a dry place.

5. Check the keel of your boat for built-up dirt and grime. If any is evident, remove and give the hull a good coating of wax.

6. Check your steering controls and if dry, grease them with an all-weather grease.

7. Remove and drain the gasoline tanks from the boat and store them in a dry place. Fixed tanks should be drained.

8. Start your motor without hookup to your tanks and run all of the gasoline out of the motor. Contact your marine dealer and obtain an additive that can be put in the motor to keep the motor from freezing up.

9. Be sure that the lower unit of your motor is full of grease.

10. Remove the sparkplug wires from the spark plugs.

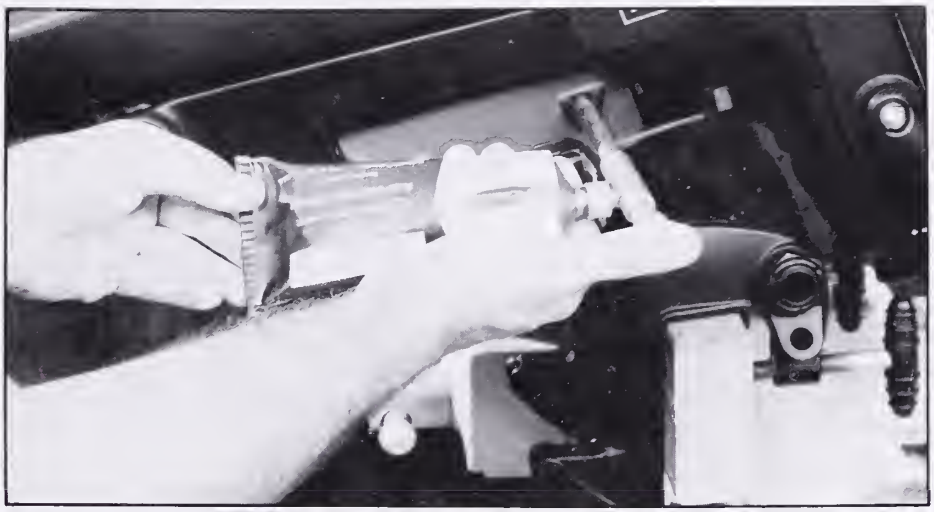
11. Use touch-up paint to cover any rust spots you may find on your motor housing.

12. Block up your trailer so the weight of your boat, motor and trailer is not concentrated on the trailer tires.

13. Remove and repack your trailer wheels.

14. Sand and repaint rusted spots on the trailer.

15. Check your electrical wiring on the trailer. If frayed, replace.



Handicapped Boaters Organize

A new Handicapped Boaters Association (HBA) was formed this fall as an outgrowth of interest shown in the Coast Guard-funded "Boating for the Handicapped: Guidelines for the Physically Handicapped," a 114-page book written by Dr. Eugene Hedley, who is himself a handicapped boatman.

The association, a non-profit corporation, will seek to further the safe participation of disabled people in recreational boating and boating-related activities throughout the country. Hedley estimates there are 400,000 people in the country who are disabled and enjoying boating. "We have found great enthusiasm from recreation professionals, people in rehabilitation, government agencies and the boating industry as well as the families and friends of disabled people," said Hedley. "We'd like to continue sharing information."

The association will be supported by membership dues and is not limited to handicapped boaters. HBA will publish a bimonthly magazine, "Boating World Unlimited," beginning with a January issue. For information on the association, write: Handicapped Boaters Association, Box 1134, Ansonia Station, New York, New York 10023 212/877-0310.

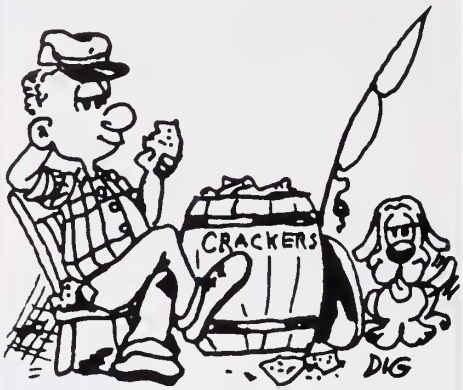
It Appears to Me

by Curly

. . . A PERSON OUGHT TO HAVE ONE

I reckon not one of us can say that we have never hankered to put our "two cents' worth" in regarding some issue or other. If we haven't done so, it could have been for a number of reasons, but for the most part it has probably been due to plain ole procrastination. Now I am not "pointing fingers" at anyone 'cause, without a doubt and to brag just a bit, yours truly is a master at "putting it off," as it were. In that vein let me tell you about an opportunity available to you that will not only allow you to comment on a subject that I'll bet you have rather strong feelings about, but also allow you to get some free ammunition in that regard. It seems that the good old United States Forest Service is in the process of developing and implementing resource and land management plans for all of the national forests, and those good folks would like to hear from us about their approach. So here is your chance to have your say. To arm yourself with the necessary information, simply request a free copy of the brochure entitled "National Forest Management Plans: How to Include Fish and Wildlife" from the address listed below, read the material, follow the instructions and make your comments and "presto" you have done it! Single copies are free from the Wildlife Management Institute, 709 Wire Building, 100 Vermont Avenue N.W., Washington D.C. 20005.

Unfortunately, this next item is only free to residents of Virginia. I say unfortunately, but that really isn't altogether true because the low cost of $1.00 these days is sort of par for the course. . .especially when you can get a bargain like "Recreational Boating in Virginia: A Preliminary Analysis." This 63-pager has been produced by the Sea Grant Communications Office of the Virginia Institute of Marine Science at Gloucester Point. Written by Tom Murray and Jon Lucy, the report provides the reader with an overview of the significance and status of recreational boating in the state. Although it speaks specifically of boating activities in the Old Dominion, the findings in general are certainly applicable to, or comparable to, boating nationwide. The first copy is free to Virginia residents. All others send one dollar, requesting Publication Number SRAMSOE No. 251 from the Sea Grant Communications Office, Gloucester Point, Virginia 23062.



No doubt you are aware of the fact that our precious farmland is literally evaporting in disturbing amounts as we stand by and do nothing about it. I reckon that we have heard about this, but do all of us know that this is happening at the alarming rate of 220 acres per hour every day, week, and month of the year? Part of this is due, of course, to the tax situation and the fact that developers can and do make extremely attractive offers. Along that line, let me call to your attention a brochure entitled "Farmland Facts" which is the first in a series and it is in quantities of 100 or less, free for the asking. Published by the American Farmland Trust, the publication discusses the tax benefits of contributing farmland and types of farmland interest that can be donated, plus many other pertinent details. Anyone interested should request Brochure #1 in the series from the American Farmland Trust, 1717 Massachusetts Avenue, N.W., Washington D.C. 10036.

. . . FOR YOUR BOOKSHELF

With Christmas now just a matter of weeks away, I can already feel panic beginning to build (as it always does with me) regarding the selection of gifts. Last month I mentioned that a surprise gift could possibly be a map or a book of maps, 'cause there are some really nice ones available these days. Of course, I am partial to maps. Not only are they practical, but on long winter nights they provide some good dreaming. Contact the Virginia Division of Mineral Resources in Charlottesville for some suggestions. Their number is 804/293-5121.

For the budding forester in your family, or for any of you who are interested in learning how to manage a forest for a variety of benefits, the Society of American Foresters has recently published a fine book on silviculture. The book, "Choices in Silviculture For American Forests," was written by foresters with the cooperation of members of the Wildlife Society. The text is not technical in nature. It's a great idea for a gift and at only $4.00, it is a real bargain. . .from the Society of American Foresters, 5400 Grosvenor Lane, Washington D.C. 20014.

A fellow named Sam Curtis has written a book which I believe is just the ticket for this time of year. "Harsh Weather Camping" is aimed at providing some savvy advice for canoeists, backpackers and anyone who gets caught in unexpected weather conditions. Not meant as a "put-down" for folks who are experienced and woodswise, it is rather a compilation of a whole passel of common sense ideas plus an excellent update on what equipment, clothing and techniques have come down the pike in the recent past. According to Sam, the book is also a tool to "enable folks to get out in any kind of weather and enjoy it." This 212-pager is liberally illustrated with photos and is available for $12.95 from the publisher, David McKay Company, Inc., 2 Park Avenue, New York, New York 10016.

. . .AND THEN

With special greeting to J.W.

"As we peer into our future, we. . . you and I. . .our government must avoid the impulse to live only for today, plundering, for our ease and convenience, the precious resources of tommorrow. We cannot mortgage the material assets of our grandchildren without risking the loss also of their political and spiritual heritage."

—Dwight D. Eisenhower.

With fond Christmas greetings, Curly.

Growing Up Outdoors

by Sarah Bartenstein

Nature News

Star Gazing

There's something about the holiday season that makes many of us think of stars, and causes us to look at them with special interest. Perhaps it's because the Star of Bethlehem is such an important part of the Christmas story, or because Chanukkah (say HAHN-eh-ka) is the "Feast of Lights."

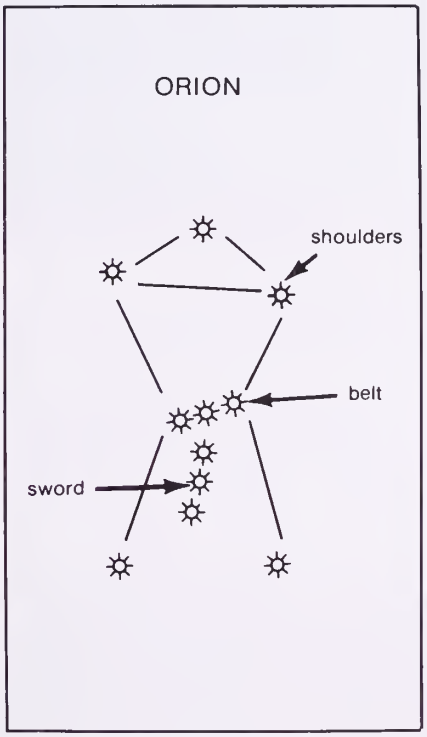
In any case, winter is an ideal time to learn more about stars. The sky always seems to be clearer on a cold winter night than at any other time. In fact, in their guide to stars, Herbert S. Zim and Robert H. Baker say that fainter stars can be seen most clearly in a winter sky.

As with so many natural wonders, stars have many myths and stories surrounding them, stories which ancient peoples told to explain the things about the world which they did not understand. Certain groups of stars were given names to identify them. The names came from images that people had of the shapes the stars made, almost like "connect-the-dot" puzzles! These groups of stars are called conste*llat*ions (kon-stel-LAY-shuns). The prefix "con" means together and "stella" means *star*. Constellations have Latin names as well as popular names.

One example of how a constellation gets its name can be found in Orion, the Hunter. This constellation is one of the easiest to find in the winter sky. While this particular group of stars may not actually look like a hunter to us at first, if you use your imagination, you may be able to see how a shepherd tending his sheep at night might look up at the sky and think of Orion. Have you ever looked up at the clouds and imagined things from the shapes they made?

There are several stories associated with Orion. One of them tells how the mighty hunter loved a maiden named Merope and wanted to marry her, but her father would not allow it. Orion performed numerous tasks, trying to win the father's confidence, but over and over again, the father refused his permission for Orion and Merope to marry. In desperation, Orion set out to carry Merope away by force. His plot was discovered, however, and Merope's father had Orion captured and blinded. Then he was cast out, helpless, to the seashore. There, he met the god Vulcan who helped Orion to reach the sun. Orion opened his eyes to the light of the sun and was able to see again. According to the story, this is why Orion is now in the sky, close to the sun.

Another story tells of Orion and Diana, the goddess of the hunt and of the moon. Diana loved Orion, and because she spent all of her time with him, she stopped riding her chariot (the moon) through the sky each night, so the nights became completely dark. Apollo, the god of the sun and Diana's brother, was dismayed by this and tricked Diana into killing Orion. When the goddess realized what she had done, she tried to bring Orion back to life. She failed, time and again. Finally, she took his body into the sky on her chariot and placed him where the night was its darkest. Stars formed the outline of the great hunter, his head, shoulders, sword and belt. The lion's skin he wore draped over his shoulder was dotted with stars. Diana placed the hunter's two favorite hunting dogs nearby—the constellations of the great dog (Canis Major) and the little dog (Canis Minor)—and marked each with a brilliant star.



That is one story of the origin of Orion's constellation, as well as Canis Major and Canis Minor. Look at the sky and find Orion. (See illustration.)

Two of the most familiar constellations are the Big Dipper (also known as the Great Bear or Ursa Major) and the Little Dipper (also known as the little Bear or Ursa Minor). Like Orion, these two constellations have many different stories surrounding them. One of them says that the two bears were hurled into the sky by Jupiter, whom they nursed when he was an infant, and hid him from his father who would have otherwise devoured him. Supposedly, Jupiter hoisted them into the sky by their tails. Imagine the weight of a bear being swung by its own tail. That is the explanation given for the great length of the tails of the Great Bear and the Little Bear—they were stretched!

Another significant thing about the Great Bear is that the tip of its tail is Polaris, the North Star. People have always used the North Star to navigate by, and in fact, even today, people use the stars and constellations to navigate. Often, you can find a certain constellation by finding its brightest star. (Different stars shine with different degrees of intensity.)

If you would like to do some serious star gazing, find a star map. Try your local library for books on stars—many of them contain maps. Or try a bookstore or hobby shop. There is much, much more to know about stars and constellations. There isn't room to explain it all here, so find yourself a good book on the subject. Here are the ones I used to learn a little about stars:

1. *Stars*, by Herbert S. Zim and Robert H. Baker. A Golden Nature Guide, Simon and Schuster, New York.
2. *The Official Boy Scout Handbook*
3. *The Stars in Our Heaven: Myths and Fables*, by Peter Lum, Pantheon Books, Inc., New York.

Happy star gazing! □

Personalities

by Francis N. Satterlee

James E. Carson from Charlottesville, Virginia, representing the reknowned international sportman's organization, Shikar Safari Club, presented Warden Austin with the organization's 1981 "Wildlife Officer of the Year Award."

Dennis L. Austin

It was in the small community of Austinville in Wythe County that Dennis Austin, Virginia's Game Warden of the Year, first saw the light of day. His father was employed by a large corporation which mined lead and zinc in southwestern Virginia.

Although Dennis can't recall at what age he began to accompany his father on hunting and fishing trips, he does remember that he was very small. His father seemed like a giant as did most adults and, at first, he felt a little squeamish about touching the game that his father harvested. That was long ago and much before the youngster was allowed to carry a gun in the field.

From that early beginning, looking forward to those trips with his father and being allowed to participate made a profound impression on the lad. It is an impression that has lasted over the years and Dennis says, "It is primarily due to my father's understanding and love for animals and the outdoors, which he passed on to me, that I am now working for the Game Commission."

During the summers as he grew up in Austinville, he spent much of his school vacation fishing and learning about nature. But by the time he was in junior high school, he spent his "vacation" working on nearby farms, putting up hay and doing other routine farm chores.

Upon graduation from Fort Chiswell High School in 1969, he spent two years studying forestry and wildlife management at Wytheville Community College. During vacations from college, he worked in the mines near his home. In 1972, Dennis transferred to Virginia Tech to study wildlife management. After one year, he dropped out to work in the mines again to raise tuition money. It was at this point that he learned that the Game Commission was seeking Game Wardens. He immediately applied, was accepted and trained and was assigned to duty in Washington County, where he works today.

Reflecting upon his job as game Warden, Dennis feels that the most rewarding aspect is teaching hunter safety to teenagers. In that regard, he speaks with considerable authority for, to date, he has trained in excess of 5,000 students.

Austin has become an integral part of his community. In addition to his many other duties, he has spoken on more than 50 radio programs, made television appearances and attended countless meetings with citizens' groups and expended much effort towards the enviromental education of school children of all ages.

This September, Dennis Austin was chosen as Warden of the Year for the Virginia Game Commission. In a congratulatory letter to Austin, Richard H. Cross, Jr., Commission Executive Director, said in part, "you have maintained a solid law enforcement effort, while leading your district in fulfilling those requests for films and talks. It will be difficult to assess all the good that comes from your work, but in the apprehension of violators you have earned the respect of your community and your department. Your effort to educate will pay dividends for years to come." Austin was further honored when he was presented recently with the "Wildlife Officer of the Year Award" by the Shikar-Safari Club International. Austin, as Virginia's Warden of the Year, attended the Southeastern Association of Fish and Wildlife Commissioners meeting in Tulsa, Oklahoma where he and "Wardens of the Year" from the other states in the Association were honored for their accomplishments.

Dennis and his wife, the former Janice Groseclose from Wythe County, and their four-year-old son make their home in Abingdon. □

The Christmas season is a good time to make provisions for

Winter Visitors

by Pat Cooley

(Preceding page) A male cardinal perches on one of the author's bird feeders. (Below) A red-bellied woodpecker demurely snips up one kernel or grain at a time. (Right) Corn, seeds, cranberries and popcorn are among the treats that your feathered visitors will enjoy. (Opposite page, clockwise) A chickadee finds the author's "wreath" to its liking; more than birds will likely visit your feeders, but there's enough for everyone, including this flying squirrel; birds love popcorn and peanut butter—spread some on a pine cone; if you want sunflowers for your feeders, plan ahead, as early as spring; (Following page) Harvested sunflowers.

Plans for your wildlife feeding station for the winter cannot begin to early. I begin to think about mine in the spring. I plant a garden of corn and sunflowers just to use in the feeder. By the end of the summer, I must keep a sharp eye on my crop for chickadees, goldfinches and other seed-loving birds will pick the garden clean before I have a chance to harvest the grains. Some birds will desperately need these grains when the weather turns biting cold, but I still leave a few of the giant sunflowers standing in the garden for the birds to enjoy before winter arrives. After I slice off the plate-size heads of the sunflowers and husk the corn, I store the grains away in a dry place until cold weather bitterly rolls in.

The Christmas season is a good time to begin to stock feeders and help mother nature along with caring for her winter boarders. By adding variety to your feeder's menu, you can expect all kinds of guests from elegant cardinals to soft and silky flying squirrels. Cardinals are non-migrating and flock over the winter months, so expect these brilliant birds to visit the feeder in numbers. They will decorate the limbs around the feeder like many beautiful, red-feathered ornaments. Backs turned towards the cold early in the morning, they are usually the first to arrive at the feeder, and in the evening often are the last to leave. Our only all-red bird with a crest especially enjoys the larger grains like whole kernels of golden corn. The cardinal can easily crack the kernels of corn by rotating the hard grain and grinding it with its thick, conical bill.

The larger blue jay loves the whole corn also. Sometimes, to clear the feeder of smaller birds, it will imitate

the cry of a hawk, then proceed to greedily gobble the corn. Once I saw a jay cram 11 kernels of corn into its gullet at one time.

The red-bellied woodpecker has a more refined behavior than the jay. It snips up just one grain at a time in its sharp, long bill and quickly wings away to a tree trunk to bang away at its treat. The red-bellied woodpecker has a fondness for popcorn. By adding popcorn to a feeder, you add variety and more stations for wildlife to feed from. The popcorn can either be strung with needle and thread or pushed onto thin strands of wire and twisted into a spiral shape tied at the end with a bright red bow. Hang the festive decorations from bleak winter branches about the feeder so smaller birds, like the tufted titmouse, can feed while larger birds control the main feeding station.

Another way to serve up popcorn to your wildlife visitors is by adding warm syrup to it. Use a popcorn ball recipe (syrup mixture—2 cups sugar, ½ cup light corn syrup, 1½ cups water warmed to hard ball stage—pour over popped corn) and pack the prepared popcorn onto a cardboard base into the shape of a cone, snowman or just a large mound. Sprinkle the packed popcorn with seeds and berries for extra attraction. I found the cardboard base held the popcorn together better than free hanging popcorn balls. If all of this takes more time than you have, simply empty handfulls of popcorn, sunflower seeds and cranberries into the feeder to add a little variety.

To create another station for the feeding area, take your favorite bread recipe and add a few tablespoons of bird seed. Braid and twist three equal lenths of dough to form a circle or can. Brush the top of the bread with egg

and sprinkle with seeds, finally pressing fresh, whole cranberries into the dough. After baking, top with a red bow. Hang your seed wreath or cane on a tree and birds like the chickadee will have a fine feast. This also makes a nice gift to friends and the wildlife around their homes.

An easier and much faster way to share with wildlife is to spread pine cones with congealed bacon grease or peanut butter and hang them from outdoor limbs. The red-bellied woodpecker especially enjoys the bacon grease. It seems most birds will go head over heels, like the mockingbird, for peanut butter. Squirrels will do all kinds of acrobatics to reach the peanut butter cones. Sometimes they get so carried away, they eat the pine cones too. This does not leave much for the cardinal, titmouse, woodpecker, chickadee, mockingbird and others that also enjoy the peanut butter, so be sure to hang enough cones to go around.

Generally, squirrels will not allow winter feeders to be for birds only. They love handouts too, and are amusing to watch. As long as several feeding stations have been set up about the main feeder, no one has to be left out. Even a small, rarely seen creature, the large-eyed, flat-tailed flying squirrel may glide in after dark (they are nocturnal) to snack on corn, cranberries and peanut butter. (If your feeder is full at night and almost empty the next morning, there is a good chance flying squirrels are visiting your feeder.)

Use your imagination and make some feeding stations using food scraps. Planning a winter feeder with variety not only gives wildlife a boost, but will give you many hours of learning and enjoyment with an assortment of fascinating visitors. □

Outdoor Notebook

Edited by Mel White

December Outdoors

Few months have more to offer the outdoorsman than December. This is a month with something for everyone, with hunters, trappers and fishermen active.

Although December can produce some cold and nasty weather, it is often sufficiently mild to permit sportsmen to dress comfortably and enjoy the outdoors. Water temperatures are often low, however, and winter fishermen and waterfowlers should take care to operate boats safely and carry extra clothing so they can change if they get wet.

Deer, bear and turkey hunters are active in December in many parts of the Commonwealth. Towards the end of the month, several counties will be open for the taking of antlerless deer. Bowhunters west of the Blue Ridge will be active and on December 21st the muzzleloaders will return to the field in the west.

Small game hunters will be able to hunt rabbits, squirrels, quail and grouse throughout December, while waterfowlers will be able to hunt geese all month, except for Back Bay where the season coincides with the duck season. Duck hunters will quit the blinds December 5th to return on the 18th for the final session.

With the exception of some tautog fishing along the Bridge-Tunnel and on the wrecks, salt water fishing will be slow. There may be some striped bass action for those hardy night trollers who work the Bridge-Tunnel. Anglers will also find some stripers in the Rappahannock, Mattaponi, Pamunky, York, and James Rivers in December.

Some avid freshwater fishermen will continue to catch landlocked stripers at such places as Smith Mountain Lake, Buggs Island Lake, Lake Anna and Lake Prince. Fishing for pickerel and muskies should also be worthwhile. Many anglers consider December a good month for largemouth bass on the larger lakes, including Lake Anna, Gaston, Buggs Island and in the upper reaches of the tidal rivers including the James, the Chickahominy and the Rappahannock. □

F.N. Satterlee

State Big Game Trophy Winners

One rack won the big game trophy honors in two categories and broke the state archery record at the statewide contest held at Deerpark Elementary School in Newport News on October 24. William D. Morgan (left) of Madison Heights holds the 15-point rack that scored 227 3/8 to make him the holder of the new state archery record as well as the winner in the 9 Points and Better Category. The previous state archery record was held by Russell L. Rainey of Charlottesville with the trophy he killed in Fluvanna County which scored 205 11/16 with 23 points. Morgan's deer was killed in Amherst County on October 10,1980.

Mary E. Sanford, center, of Warsaw was the winner in the 6 Points & Under Category with the buck she killed in Richmond County. The deer which scored 149 2/8 was the first that Mrs. Sanford had ever killed.

On the right is the state winner in the 7 & 8 Points Category, Stewart Bush from Aylett. His trophy, taken in King William County, had 8 points and scored 192 15/16.

State record holder Morgan was also the winner in the archery class in the western Regional Contest recently held in Harrisonburg. □

Wildlife Club Benefits Schools

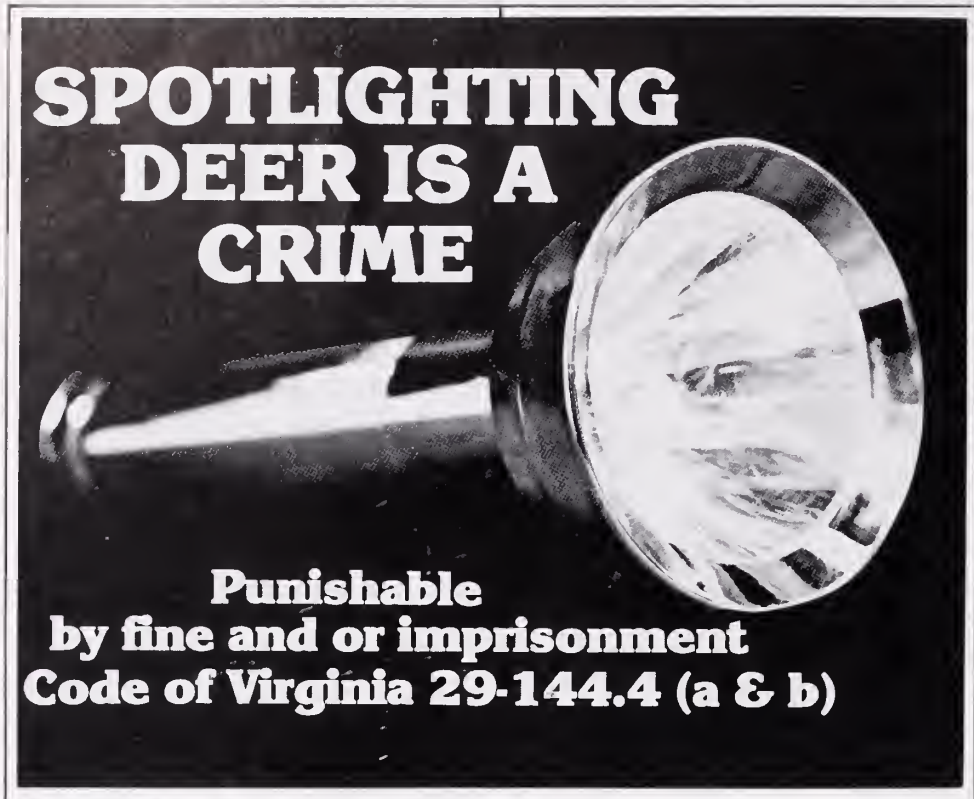
The Fairfax Wildlife Club's fund raising activities this year have enabled them to donate $2,000 to four local school libraries to purchase books related to wildlife and natural resources.

State game warden Blake Denney is a club member and prime mover in the school library project. Through the efforts of Warden Denney and the club, four local schools—James A Robinson Secondary School, Warrenton Junior High, Marsteller Middle School and Blue Ridge Middle School—were presented $500 each for new books.

VIMS Offers New Seafood Brochures

The Virginia Institute of Marine Science Sea Grant Program now offers six new seafood species brochures. These include The American Oyster, The Blue Crab, The Hard Clam, The Monkfish, The Softshell Crab and The Bluefin Tuna. The leaflets are complete with life history facts, commercial harvest figures and perhaps best, proven recipes.

The brochures are free and are available in limited quantities from VIMS Sea Grant Advisory Services, College of William and Mary, Gloucester Point, Virginia 23062.



Spotlight Warning Poster

This new poster has been put on display throughout Virginia to warn potential spotlighting "hunters" that shooting deer at night with the aid of lights is illegal and will be dealt with to the fullest extent of the law.

Print Offer

"A Close Call," Edward J. Bierly's delightful painting on this month's cover, is available as a signed and numbered print. This edition, limited to 800 copies, has been published on all-rag, museum-quality paper and has an overall size of 23" x 29". The prints cost $60.00 each plus shipping and sales tax, and include framing instructions and a biography of the artist.

All prints are shipped flat via UPS. Send you order with remittance and street address to EJB Editions, 8833 Lake Hill Drive, Lorton, Virginia 22079. Please include $5.00 shipping charges and 4 percent Virginia sales tax.

A full-color catalog featuring the complete collection of limited edition prints by this well-known Virginia artist is also available for $2.50 postpaid. □

For Christmas

The Virginia Outdoor Network

If you've been looking for a terrific stocking stuffer for a special sportsman, then the *Virginia Outdoor Network* may well be the answer to your problem.

The *Virginia Outdoor Network* is the newsletter which combines fishing and hunting information updates with timely information as to where one should go in the Commonwealth to experience the finest outdoor sport available. Specific information concerning public accessibility, lodgings and restuarants, and the best guides available is included in each issue.

An attractive card bearing your name will be mailed to the recipient of your Christmas thoughts.

ORDER NOW

TO: _____
Name

_____
Address

_____
City State Zip

FROM: _____

Cost for a subscription is $16/year for 18 issues of the Virginia Outdoor Network. Checks or money orders should be made payable to the Virginia Outdoor Network. Mail to:

THE VIRGINIA OUTDOOR NETWORK
Dept. V.W. P.O. Box 455
Sandston, Virginia 23150

A Holiday Meal

by Joan Cone

Many of us will be serving some type of wild game for our holiday dinners. We should give special thanks that we live in a state where there is such a variety and abundance of game, and that it is available to us for the small price of a state hunting license.

MENU

Creamy Mushroom Soup
Apple Cider Venison Roast
Potatoes Florentine
Orange-Mushroom Salad
Choco-mint Fondue

CREAMY MUSHROOM SOUP

1 jar (4½ ounces) sliced mushrooms, drained; reserve liquid
2 tablespoons chopped onion
2 tablespoons butter or margarine
¼ cup flour
2 beef boullion cubes
hot water
¼ teaspoon basil leaves, crushed
1 bay leaf
dash pepper
1 cup half-and-half

In medium saucepan, saute mushrooms and onion in butter until onion is tender. Stir in flour until well blended. Add hot water to reserved mushroom liquid to make 2½ cups. Dissolve boullion cubes in water; add to mushroom mixture. Stir in basil, bay leaf and pepper. Cook and stir until slightly thickened. Reduce heat, cover and simmer 10 minutes. Remove bay leaf. Add half-and-half; cook until heated through. Makes four one-cup servings. This recipe can easily be doubled.

APPLE CIDER VENISON ROAST

7- to 8-pound venison roast
¼ cup flour
2 cups apple cider
salt
spice Parisienne (Spice Islands) or your favorite spice

Place a 14" x 20" Brown-in-Bag in a 2" deep roasting pan. Add ¼ cup flour inside bag and shake to coat. Add cider and stir until blended with flour. Salt roast well and sprinkle with spice. Place meat in bag and close with nylon twist. Make six half-inch slits in top of bag. Roast in a 350° oven for 2½ hours or until tender. For a 3- to 4-pound roast, cut flour and cider in half and roast for 1 to 1½ hours.

POTATOES FLORENTINE

2 medium potatoes, pared and thinly sliced
1 medium onion, sliced
1 package (10 ounces) frozen chopped spinach, thawed and drained
¾ cup Bisquick baking mix
1¾ cups milk
½ cup shredded Cheddar cheese
2 eggs
¾ teaspoon salt
½ teaspoon Italian seasoning
⅛ teaspoon pepper

Preheat oven to 350°. Grease a rectangular baking dish, 12" x 7½" x 2". Layer potatoes in dish; top with onion. Mix remaining ingredients; pour over top. Bake until potatoes are tender, about 35 to 45 minutes. Serves 4 to 6.

ORANGE-MUSHROOM SALAD

4 cups torn romaine
1/3 cup raisins
¼ cup sliced green onion (optional)
1 can (11 ounces) mandarin oranges, drained
1 jar (4½ ounces) sliced mushrooms, drained
1/3 cup oil
3 tablespoons vinegar
1 tablespoon sugar
½ teaspoon salt

In large bowl, toss romaine, raisins, onion, oranges and mushrooms. Combine remaining ingredients. Pour over salad and toss. Serve immediately. Serves 6 to 8.

CHOCO-MINT FONDUE

2 cups (12-ounce package) chocolate chips
1 3 cup half-and-half
1½ tablespoons Creme de Menthe
3 tablespoons Creme de Cocao
mini cream puff dippers

Over low heat combine chocolate chips and cream. Stir occasionally until all chips are melted. Stir in liqueurs. Add more cream, if desired. Pour into fondue pot and keep on low heat. Serve with mini cream puff dippers. Makes 1½ cups.

MINI CREAM PUFF DIPPERS

1 cup water
½ cup butter
1 cup flour
⅛ teaspoon salt
4 eggs

Bring water and butter to boil, stirring until butter melts. Add flour and salt all at once. Reduce heat. Cook, stirring vigorously until mixture is smooth and forms a soft ball, one or two minutes. Remove from heat and cool slightly. Add eggs one at a time, beating well after each. Drop by level teaspoonfuls onto greased baking sheet. Bake in a preheated 400° oven 30 to 40 minutes or until firm. Cool. □

Enjoy big savings: subscribe to **Virginia Wildlife!**

The per-copy price of *Virginia Wildlife* is $1.00, but when you buy it "by the dozen," you save $7.00 a year! And if you buy the three-year subscription, you can save $23.50—that's a 65% savings! Think of the convenience of having this beautiful color magazine delivered to your door every month. You can't afford not to subscribe to *Virginia Wildlife*! Mail to *Virginia Wildlife*, P.O. Box 11104, Richmond, Virginia 23230-1104, or give it to your game warden.

Yes, I want to save up to 65% over the newsstand price of *Virginia Wildlife!*
Send me □ one year for $5.00 □ three years for $12.50
This is a □ new subscription □ renewal □ gift subscription

Name _____
Address _____
City _____ State _____ Zip _____
Please allow six to eight weeks for delivery Credit Warden No. _____

Bird of the Month

by Carl "Spike" Knuth

The Sparrow Hawk

A cold, strong northwesterly wind held the winter-weary land in its icy grip. Dry fields of grass, weeds and trees shuddered as the wind whipped up little "dust-devils" from the rock-hard ground. My eye caught a slight movement at the very top of a lifeless sumac. A medium-sized bird sat there with fluffed feathers occasionally ruffled by the wind. It jerked its long tail as if it had a nervous habit. Suddenly it took to wing, dropping down first to pick up speed, its long, pointed wings carrying it quickly to a patch of dried, broken weeds. Here, some 20 yards or so above the hard earth, it turned into the wind, hovering with tireless, quickbeating wings while scanning the ground below. After what seemed like many minutes, it suddenly swooped down, stabbing in the grass and weeds with its feet, then rising to a telephone pole with a small meadow vole—a mouse-like rodent—in its talons, and proceeded to feed.

This drama is actually a common sight and if you've seen it, you've witnessed the hunting technique of Virginia's smallest falcon, the sparrow hawk. The sparrow hawk, also known as kestrel, grasshopper hawk or windhover, measures only about 11 inches in length. Its color above is basically cinnnamon or rufous red with bluish wings; while its undersides are rusty to buff in color with small black spots, becoming larger on the flanks. Its back and shoulders are evenly barred with five lines of black. Its tail too, is rufous with a broad band of black, tipped with white. The kestrel's crown and

the back of its head are bluish, enclosing a patch of chestnut brown at the top of its head. Its throat and cheeks are white with a vertical black marking below the eye and another bordering the back of its cheek. The female is similar, but she lacks the bluish colorings and is all rufous red on back and wings instead.

Sparrow hawks nest in natural tree cavities, deserted woodpecker holes, in rock or bank cavities and occasionally in man-made nesting boxes. No nesting materials are utilized for the four to five brown, spotted eggs. Young sparrow hawks are somewhat unique in that, at an early age, their sexes are distinguishable by their plumage, resembling adults of like sex.

The sparrow hawk prefers open country and has been able to adapt to living in proximity to man—close to, and sometimes within, cities and towns. Here, the hunting habits of this little falcon can be observed easily. It perches atop telephone poles, on wires, fence posts, stumps or at the very tip of a barren tree or shrub. A very recognizable characteristic is its habit of jerking its tail as it waits.

It is quite common here from central to southwestern Virginia, especially during the winter months. From a high lookout it is able to see a long distance as it watches for rodents or other prey. When it spots something, its powerful wings carry it quickly to the spot where it turns into the wind to hover. Even in a strong wind, they seem to be able to maintain their hunting posture as if suspended by an invisible string. When it spots its prey, it swoops down and pounces on it, carrying it to a high perch.

It is interesting to note that the sparrow hawk has black markings surrounding its eyes as do other birds that catch prey, either inflight or by diving on it. Could it be that the dark patches prevent glare or absorb sunlight just as a football player's blackened eyes do during an afternoon football game? Despite the help of non-glare eye-markings, the sparrow hawk will occasionally miss its intended target, at which time it returns to a high lookout to continue its vigil. Its food consists mainly of grasshoppers, locusts, crickets, and rodents, but will occasionally prey on lizards, snakes and small birds. □

KNUTH

In Nature's Garden

by Elizabeth Murray

Ironweed

Late summer is the time for the high, tough, showy weeds, a great many of them yellow, and a great many of them belonging to the daisy family, or Compositae. All the heleniums, the black-eyed susans and the goldenrods come into their own at this time of year. Plant taxonomy classes often have unprintable names for these big, yellow daisies because there are so many of them and their classification is so complicated that it becomes a daunting task for all but the most highly dedicated. However, in all of this yellow sea along the roadsides and throughout the pastures in August and September, there is one large, conspicuous member of the Compositae which is easy to spot and identify by virtue of its striking color, not yellow, but a deep, rich purple, and that is ironweed.

The Compositae is the largest family of flowering plants in the world and the flower structure is unique to the family. What we normally think of as one flower is, in the daisy family, actually a whole group of flowers forming a composite head, hence the name of the family. In many members, the flowers are of two types, ray flowers and disc flowers. But in ironweed the flowers are of only on type, the disc type, and the flower heads are therefore said to be *discoid*. Each ironweed flower is *perfect*, that is, each flower has both male and female parts. Each flower head is supported by an *involucre* composed of many overlapping bract-like structures called *phyllaries*.

Ironweed grows very tall, to as much as seven feet high with branching stems and slender pointed leaves all up the stems. The leaves are very dark green, sometimes almost deep purple themselves.

Vernonia must have a moist habitat to grow well, and it is found commonly along stream banks and in the wetter areas of almost every pasture. The various species hybridize freely and so it is often difficult to determine the species, but the one most commonly found in Virginia is *Vernonia novaboracensis*. Ironweed is primarily a plant of the southeastern states although some forms are found as far north as Massachusetts.

Lucile Walton

The flower books describe ironweed as a "rank perennial" which is not a very flattering appellation. It is certainly a tough, hardy, persistent and common weed, but I, for one, am grateful for its bold, colorful appearance at the end of summer, and I expect Mr. Vernon was, too. William Vernon was an early English botanist who travelled in North America in the late seventeenth century, and it is for him that the genus *Vernonia* is named. □

Index To Virginia Wildlife

1981, Volume XLII, Numbers 1-12

ART SPREADS AND PHOTO-ESSAYS

Birds of the Winter Marsh, Knuth and Badger ..... Jan, 26
Etched in Fire, Peters ..... Mar, 10
Glistening Woodlands, Slaughter ..... Feb, 18
In Your Own Backyard, Cassel ..... Jun, 10
Paintings of Bill Martz ..... Aug, 18
Spring Thaw: March's Soggy Rescue, Cooley ..... Mar, 18

BIOGRAPHY

*Dennis Austin: Warden of the Year**, Satterlee ..... Dec, 24
Blue Ribbon Birds, Satterlee ..... Oct, 16
*Lt. Joe Cooke**, Satterlee ..... Apr, 21
*Rex W. Crawford**, Satterlee ..... Aug, 22
*Otto Halstead: Wildlife Watchdog**, Edgar ..... Oct, 24
*Engle Receives Forest Service Award**, Satterlee ..... May, 21
*Game Chief and Pilot Recognized by Ishi Bowhunters**, Bartenstein ..... May, 21
Prince Jeff, Knuth ..... Apr, 15
*Rose River Romp**, Satterlee ..... Jun, 24
*Sgt. Ray Smith**, Satterlee ..... Feb, 15
*Harold Trumbo**, Satterlee ..... Jul, 22
*Sgt. Ted Ward**, Satterlee ..... Jan, 15

BIRDS

Common Birds: A Closer Look, Grigg ..... Mar, 16
*Eastern Kingbird**, Knuth ..... Jun, 34
*Mallard**, Knuth ..... Oct, 34
New Arrivals, Price ..... Aug, 4
*Peregrine Falcon**, Knuth ..... Jan, 34
Pet or Pests? (Pigeons), Cobb ..... Mar, 6
*Pied-Billed Grebe**, Knuth ..... Feb, 34
*Ruby-Throated Hummingbird**, Knuth ..... Aug, 34
Scavengers of the Waterway, Knuth ..... Feb, 10
*Sparrow Hawk**, Knuth ..... Dec, 32
*Song Sparrow**, Knuth ..... Mar, 34
Summer of the Eagle, Hubbell ..... May, 6
Unwelcome Guests (Cowbird), Lochmiller ..... Jun, 6
Urban Ducks, Scanlon ..... Jun, 22
Winter Visitors, Cooley ..... Dec, 25
*Yellow-Billed Cuckoo**, Knuth ..... Jul, 34
*Yellowlegs**, Knuth ..... Apr, 34
*Yellowthroat**, Knuth ..... May, 34

EDITORIALS

Sportsman's Education (Jan) Gillam, p. 3; *Steel Shot Revisited* (Feb) Gillam, p. 3; *Wildlife in the 80's* (Mar) Gillam, p. 3; *Of Bass and Bureaucrats* (Apr) Gillam, p. 3; *Take a Kid Fishing* (May) Gillam, p. 3; *Boating Courtesy* (Jun) Kerrick, p. 3; *Sociology of Hunting* (Jul) Gillam, p. 3; *Ethics* (Aug) Gillam, p. 3; *It Takes More Than Skill* (Sep) N.R.A., p. 2a; *To Help a Neighbor* (Oct) Randolph, p. 3; *A Month of Opportunity* (Nov) Randolph, p. 3; *The New Virginia Wildlife* (Dec) Gillam, p. 3.

FISHING

Cascades Trout, Brevis ..... Apr, 7
Cold Day's Reward, Knuth ..... Dec, 9
Don't Apologize for Panfish, Pauley ..... Jun, 12
Fisherman's Luck, Parsons ..... Aug, 15
Formula for Trophy Trout, Bugas & Mohn ..... Oct, 14
From Fisherman to Angler, Olmsted ..... Jan, 5
Gem of the Shenandoah (Redbreast), Hardy ..... Mar, 8
Lure of the Surf, Randolph ..... Aug, 20
No Easy Target, Harris ..... Jul 4
Panfish on Ice, Ney ..... Feb, 4
Rapidan Reverie: Pure Angling, Elkins ..... Jun, 4
Rest of the Bass Flies, Eastby ..... Aug 25
Silver in Our Streams, Bugas & Mohn ..... May, 23
Slightly Damp, Eastby ..... Apr, 27
Stripers, the Converters, Almy ..... Jul, 17
Tiger of the Weed Beds, Gooch ..... Oct, 4

HOW-TO

Capturing Your Catch on Film, Almy ..... May, 26
Crabbing From a Pier, Bishop ..... Jul, 10
Gourmet Game, Cone ..... Feb, 24
Guardians of the Garden, Skinner ..... Apr, 8
Mixed Bag of Virginia Game Recipes, Cone ..... Sep, 30
*Outdoor Skills**, Bartenstein ..... Aug, 23

HUNTING AND TRAPPING

Aesthetics of Turkey Hunting, Shaffer ..... Sep, 7
All in the Name of Quail, Vance ..... Sep, 13
Beaver Trapping: A History, Snyder ..... Feb, 26
Canvasback Hunting: Why Not? Alison ..... Apr, 12
Chincoteague Deer, Rivinus ..... Nov, 14
Dawn in the Autumn Hardwoods, Gooch ..... Sep, 16
Early Duckin', Slaughter ..... Sep, 25
Gray Ghost, Knuth ..... Sep, 23
Grouse on the Rapidan, Shank ..... Sep, 3
Gunning for Geese, Gooch ..... Jan, 10
Hunt the Nooks and Crannies for Quail, Shank ..... Nov, 24
It's All Part of the Hunt, Almy ..... Sep, 9
Look Down on Deer, Slaughter ..... Nov, 12
Molly, Randolph ..... Feb, 6
1981 Game Laws ..... Oct, 12
Partners Afield, Rundell ..... Sep, 18
Point of Honor, Bays ..... Mar, 28
Raccoon Stocking—More or Less, Taylor ..... Dec, 4
River Bank Quarry: The Fox Squirrel, Almy ..... Jan, 20
Sharpen Up With Crows, Gooch ..... Aug, 12
Sociology of Hunting, Krug ..... Feb, 16
Swamp Partridge, Almy ..... Oct, 9
Tally-Ho!, Jane Ellet ..... Sep, 20
Taste for Venison, Peery ..... Jan, 6
Trapping Basics, Shumaker ..... Dec, 13
Tried and True, Shank ..... Jun, 17

LOCALES

The Wild Heart of Richmond: James River Park, Robertson ..... Apr, 17

MAMMALS

Fawning Time, Scanlon ..... May, 4
Muskrat, Fulgham ..... Dec, 7
Shrew, Sculley ..... Oct, 25

MANAGEMENT

Forest Management Works for Wildlife, Trumbo & Sims ..... Nov, 20
Friendly Fire, Brattan ..... Mar, 20
Gluttonous Game Fish, Hart & Randolph ..... Jan, 24
Grouse Cycles: Ups and Downs, Coggin ..... Dec, 15
1981 Trout Stocking Plan ..... Mar, 14
Scent Post, Coggin ..... Feb, 8
What's In Your Pond?, Smith ..... Aug, 16
Wild Turkey Challenge, Gwynn ..... Jan, 7
Woodsman, Spare That Den Tree, Wald ..... Mar, 25

MISCELLANEOUS

Beans to You, Dickey ..... Oct, 21
Best-Kept Secret, Cahill ..... May, 8
*Boy Scouts Cook Their Way to Jamboree**, Bartenstein ..... Jul, 16
Exploring the Winter Woods, Belton ..... Dec, 17
*First Signs of Spring**, Bartenstein ..... Apr, 23
How Many Kilograms in a Killadeer?, Weekes ..... Feb, 20
Hunter Education Steps Into the '80's, Gillam ..... Sep, 33
Local Color, Mertz ..... Aug, 8
*Mealtime for Wildlife**, Bartenstein ..... Feb, 23
Mumblers, Dickey ..... Feb, 13
*Paper**, Bartenstein ..... Oct, 22
*People Outdoors**, Bartenstein ..... May, 16
*Planning a Summer Vacation**, Bartenstein ..... Jun, 16
*Potpourri**, Bartenstein ..... Nov, 23
The Rent Can Wait, Dickey ..... Jul, 14
Secrets of Winter Trees, Cooley ..... Jan, 18
*Star Gazing**, Bartenstein ..... Dec, 23
Stormy Weather, Traister ..... Jul, 8
Take a Child, Shield ..... Apr, 4
Trees & Shrubs of Virginia (review), Bartenstein ..... Oct, 18
Wetland Savers: DU ..... Nov, 6
Wildlife Gets a Tax Break, Coggin ..... Oct, 6
*Wintering Wildlife**, Bartenstein ..... Jan, 23
Wretched Miscroscopic Beasties, Williams ..... Jun, 14

NATURAL HISTORY

The Eastern Shore Algonquians, VanKesteren ..... Mar, 22
Horseshoe Crab: Our Living Fossil, Slaughter ..... Jul, 27
Virginia's Changing Topography, Part II: The Chesapeake Bay, Smith ..... Jan, 16

PLANTS

Anticipation, Thomas ..... Jul, 12
Bane of the Woods, Thompkins ..... Jul, 6
*Fennel**, Murray ..... Nov, 33
Flowering Trees of Virginia's Forests, McEwan ..... Apr, 25
*Greenbriar**, Randolph ..... Feb, 33
Hedgerow: Nature's Lifeline, Knuth ..... Sep, 28
*Ironweed**, Murray ..... Dec, 34
Jewels in the Grass, Neale ..... May, 17
*Jimson Weed**, Murray ..... Oct, 33
*Maple-Leaved Mallow**, Murray ..... Jun, 33
*Monkey Flower**, Murray ..... May, 33
*Moth Mullein**, Murray ..... Aug, 33
Native Orchids, Fallis ..... May, 10
*Ox-Eye Daisy**, Murray ..... Jul, 33
Shadbush, Russell ..... Mar, 4
*Strawberries**, Murray ..... Mar, 33
*Trailing Arbutus**, Sulak ..... Jan, 33
*Venus' Looking-Glass**, Murray ..... Apr, 33

RECREATION

Adventures on the Meherrin, Short ..... May, 14
Discovering Home, Knuth ..... Nov, 8
Four Days on the Nottoway, Beck ..... Jul, 23
Getting Oriented, Comis ..... Aug, 6
Lake Moomaw, Mohn ..... May, 18
River of Opportunity, Heerwald ..... Oct, 26

REPTILES AND AMPHIBIANS

Some Enchanted Evening, Cooley ..... Jun, 25
Where the Snakes Are, Mitchell ..... Jun, 8

*Denotes departmental entry

Wildlife

Has An Energy Problem, Too

For the first time in Virginia's history, all taxpayers can help those fascinating creatures we call non-game wildlife. They are called "non-game" because they are neither trapped, hunted nor fished. They are there simply because they belong. Virginia is their home,too.

Until now, only sportsmen—through the sales of licenses and taxes on guns, ammunition and fishing tackle—supported wildlife. No state tax funds are spent for this purpose. This year, when you pay your Virginia State Income Tax, you can contribute part or all of your tax refund to Virginia's Non-game Program. Simply indicate the amount of your refund you wish to contribute, in whole dollars, in Block 20 of your income tax form. IF YOU HAVE NO REFUND DUE YOU MAY STILL CONTRIBUTE. Your contributions are deductible from your 1982 federal and state income taxes. Simply make out a check to the Virginia Commission of Game and Inland Fisheries, Non-Game Program, and mail it to the Virginia Commission of Game and Inland Fisheries, P.O. Box 11104, Richmond, Virginia 23230-1104.